R E P O R T R E S U M E S

ED 018 649 VT 004 305

22 CHARTS TO ACCOMPANY PEACETIME RADIATION HAZARDS IN THE FIRE SERVICE--BASIC COURSE.

OFFICE OF EDUCATION (DHEW), WASHINGTON, D.C.
REPORT NUMBER OE-84022 PUB DATE 61
ATOMIC ENERGY COMMISSION, WASHINGTON, D.C.
EDRS PRICE MF-~~$0.50~~ *0.75 HC NOT AVAILABLE FROM EDRS. 89P.

DESCRIPTORS- *CHARTS, *FIRE FIGHTERS, *RADIATION, *TRADE AND INDUSTRIAL EDUCATION,

A SET OF TWENTY-TWO 20-BY-28 INCH CHARTS ILLUSTRATING ASPECTS OF RADIATION SUCH AS TYPES, EFFECTS OF EXPOSURE, SHIELDS, WARNING SIGNS, REACTORS, THE CHAIN REACTION PROCESS, AND FIRE-FIGHTING PROCEDURES IS TO BE USED WITH (1) RESOURCE MANUAL (VT 001 337), (2) INSTRUCTOR'S GUIDE (VT 002 117), (3) STUDENT STUDY GUIDE (VT 001 878), (4) ORIENTATION UNIT--STUDENT MANUAL (VT 002 067), AND (5) ORIENTATION UNIT--INSTRUCTOR'S GUIDE (VT 001 989). THIS DOCUMENT IS AVAILABLE AS FS5.284--84022 FOR $2 A SET FROM SUPERINTENDENT OF DOCUMENTS, U.S. GOVERNMENT PRINTING OFFICE, WASHINGTON, D.C. 20401. (PS)

SAMPLES

DO NOT PLACE UNDEVELOPED FILM WITHIN 5 METERS (15 FEET) OF THIS CONTAINER

RADIOACTIVE MATERIAL

GROUP I or II

NO PERSON SHALL REMAIN WITHIN 1 METER (3 FEET)
OF THIS CONTAINER UNNECESSARILY

PRINCIPAL RADIOACTIVE CONTENT_____

ACTIVITY OF CONTENTS_____

RADIATION UNITS THIS PACKAGE_____

NOT MORE THAN 40 UNITS
SHALL BE LOADED IN ONE
AIRCRAFT OR HELD AT
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S OF RADIATION WA

CAUTION

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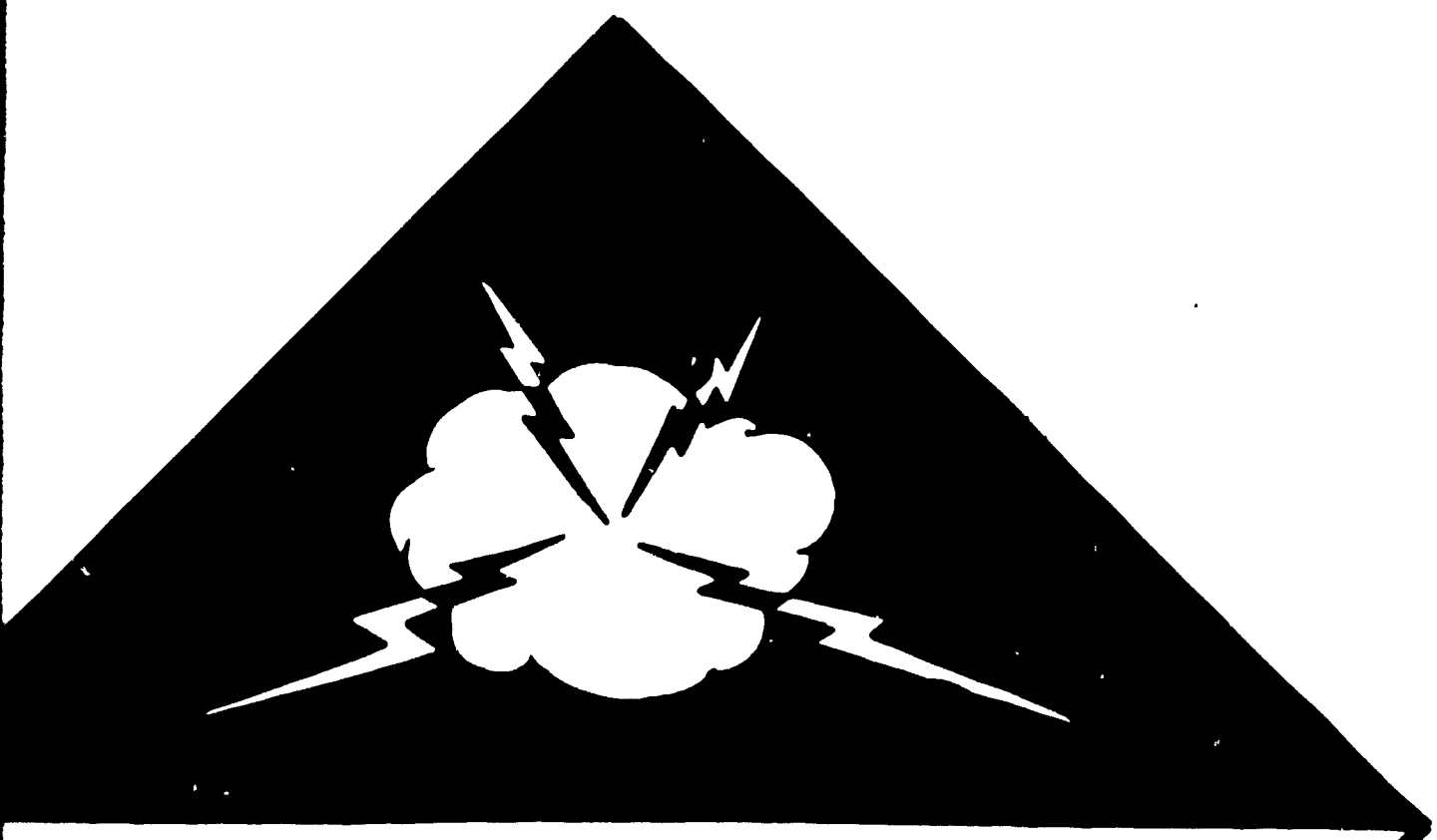

HANDLE CAREFULLY

RADIOACTIVE MATERIAL

GROUP III

CONTENTS _____

EMITTING CORPUSCULAR RAYS ONLY

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SAMPLES

DANGEROUS - RADIOACTIVE MATERIAL

PRINCIPAL RADIOACTIVE CONTENT_____

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NOT MORE THAN 40 UNITS SHALL BE LOADED IN ONE AIRCRAFT OR HELD AT ONE LOCATION OR POINT

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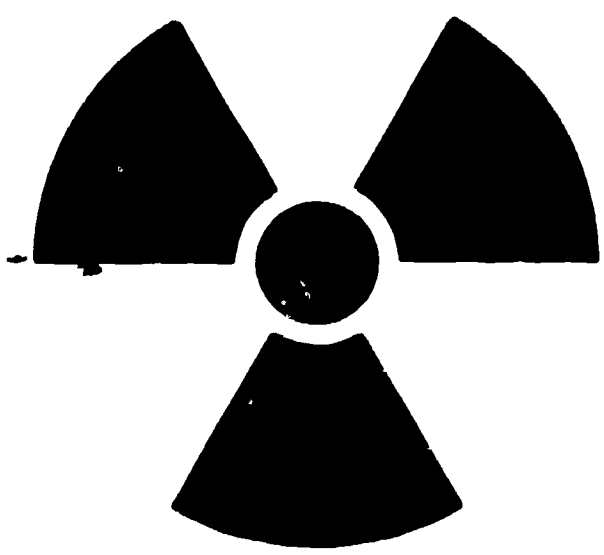

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Peacetime Radiation Haz

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CONTENTS

EMITTING CORPUSCULAR
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GROUP III

CONTENTS

EMITTING CORPUSCULAR RAYS ONLY

Fire Service: Basic Course

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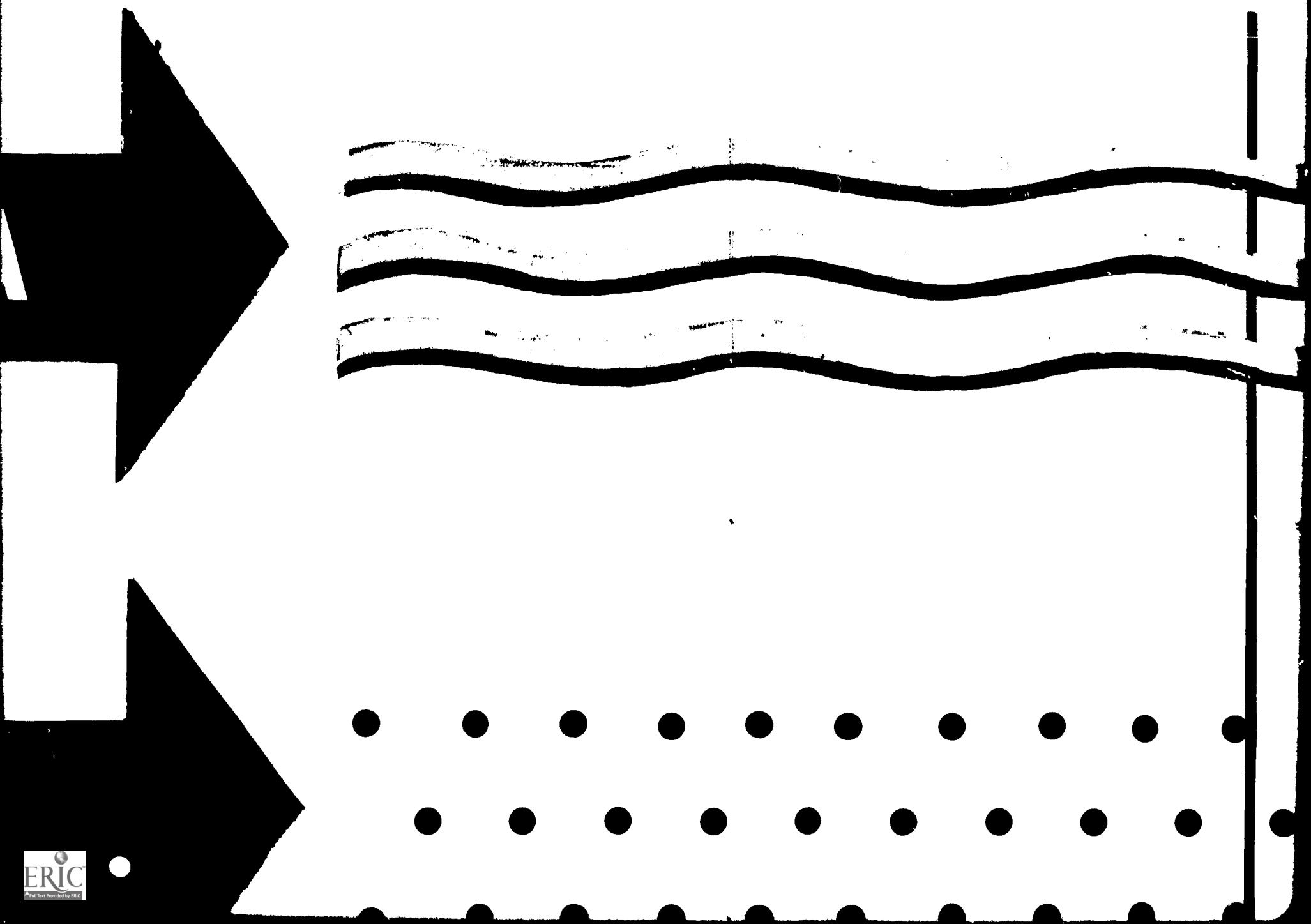

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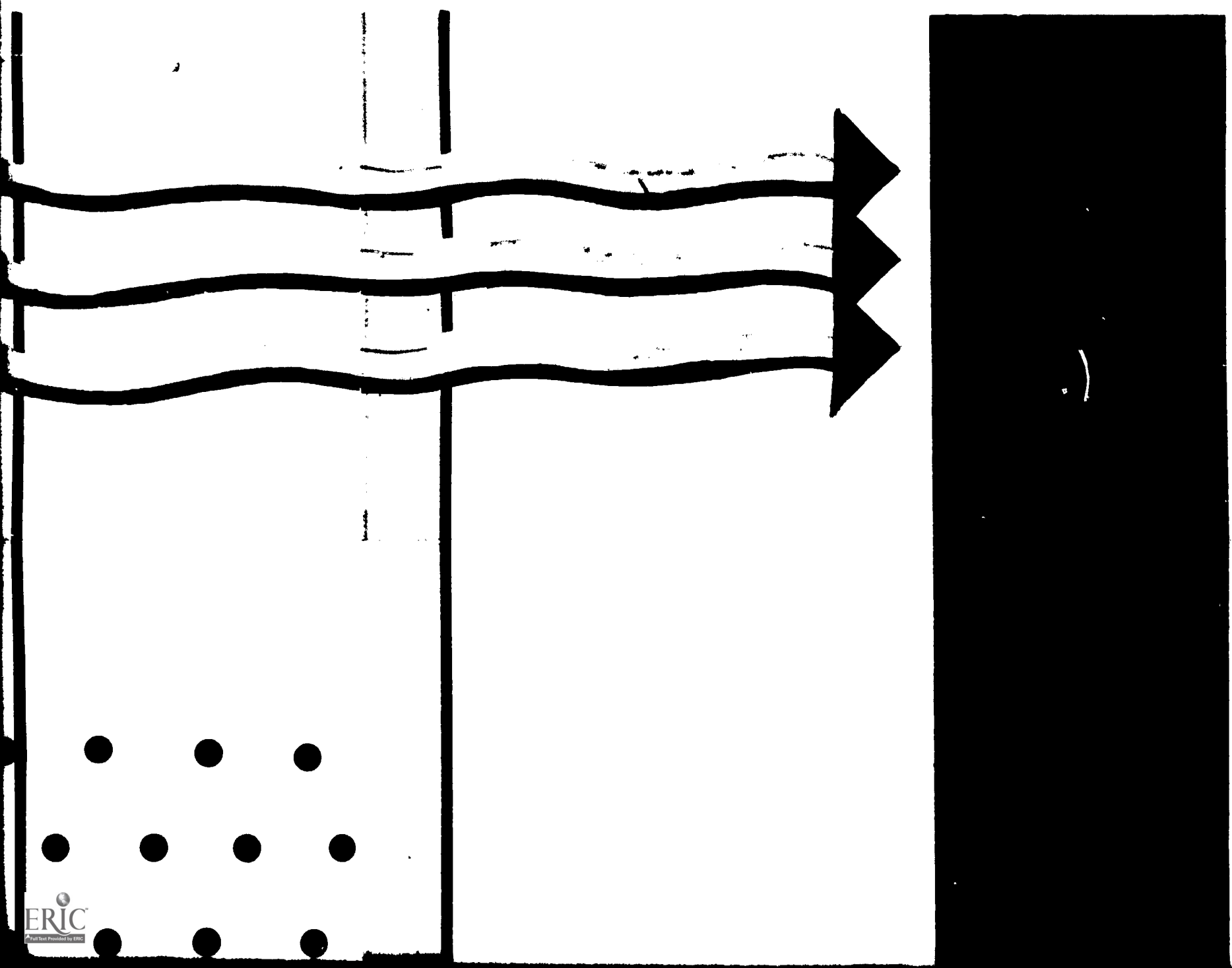

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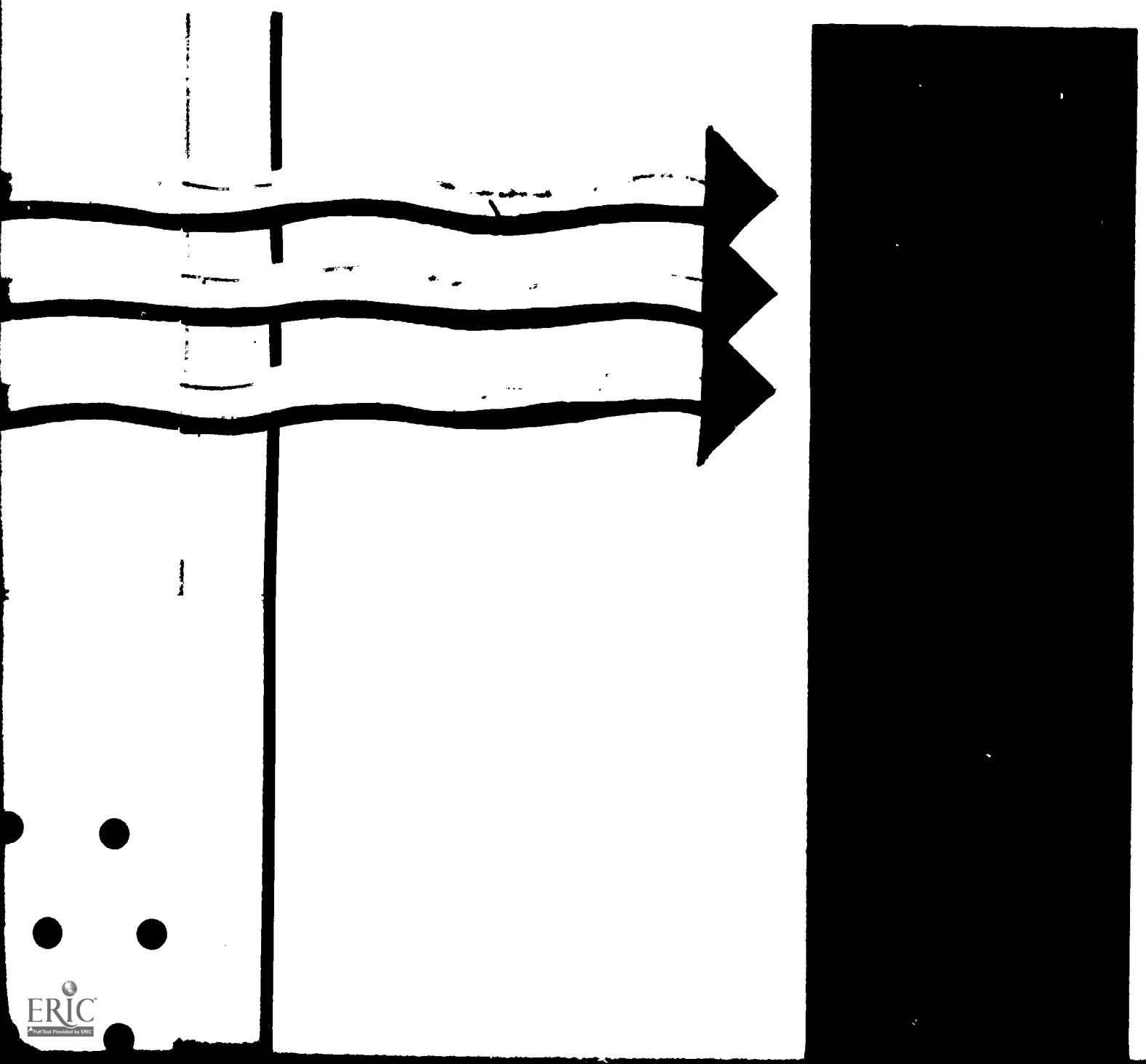

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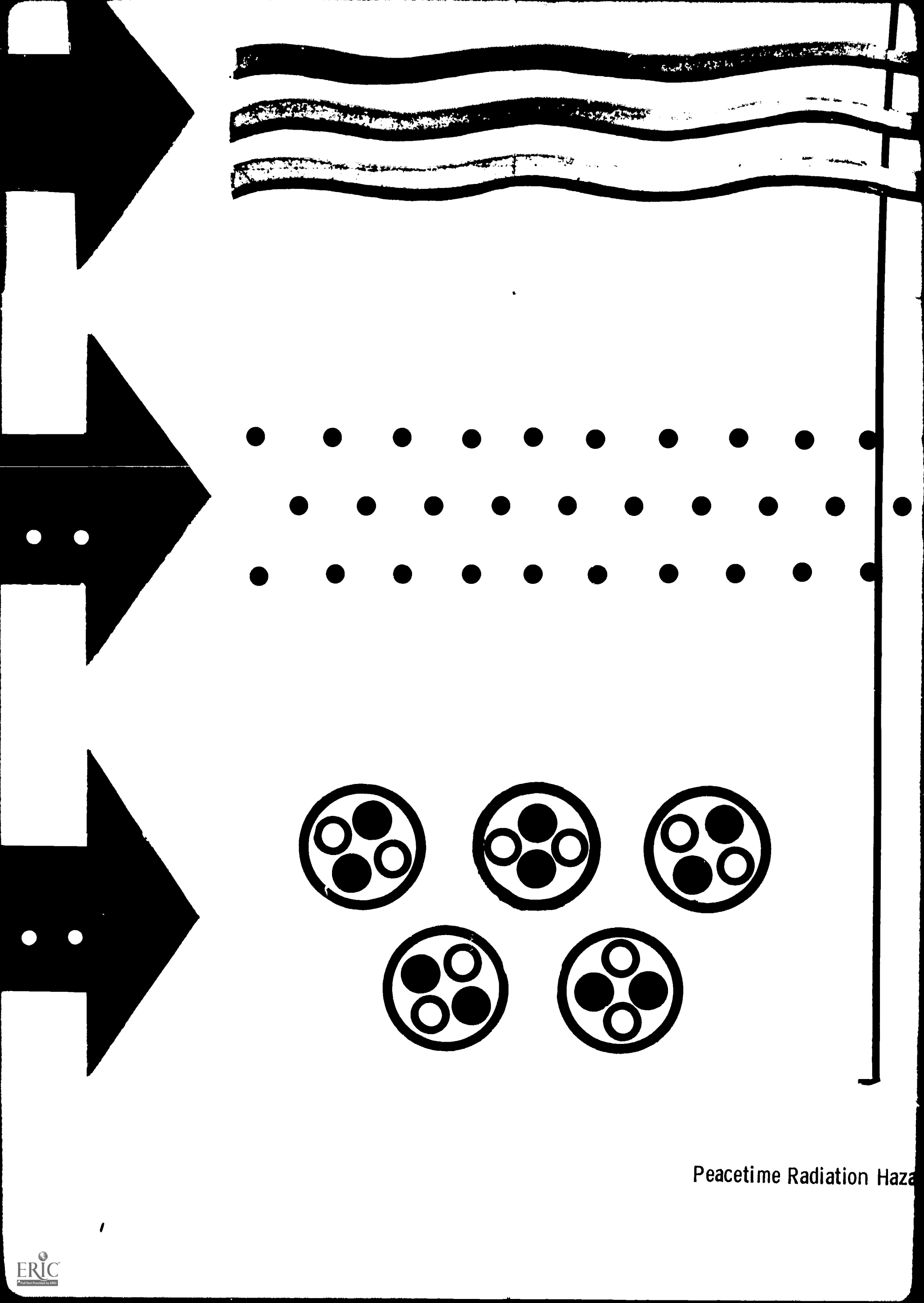
VERY SHORT RANGE



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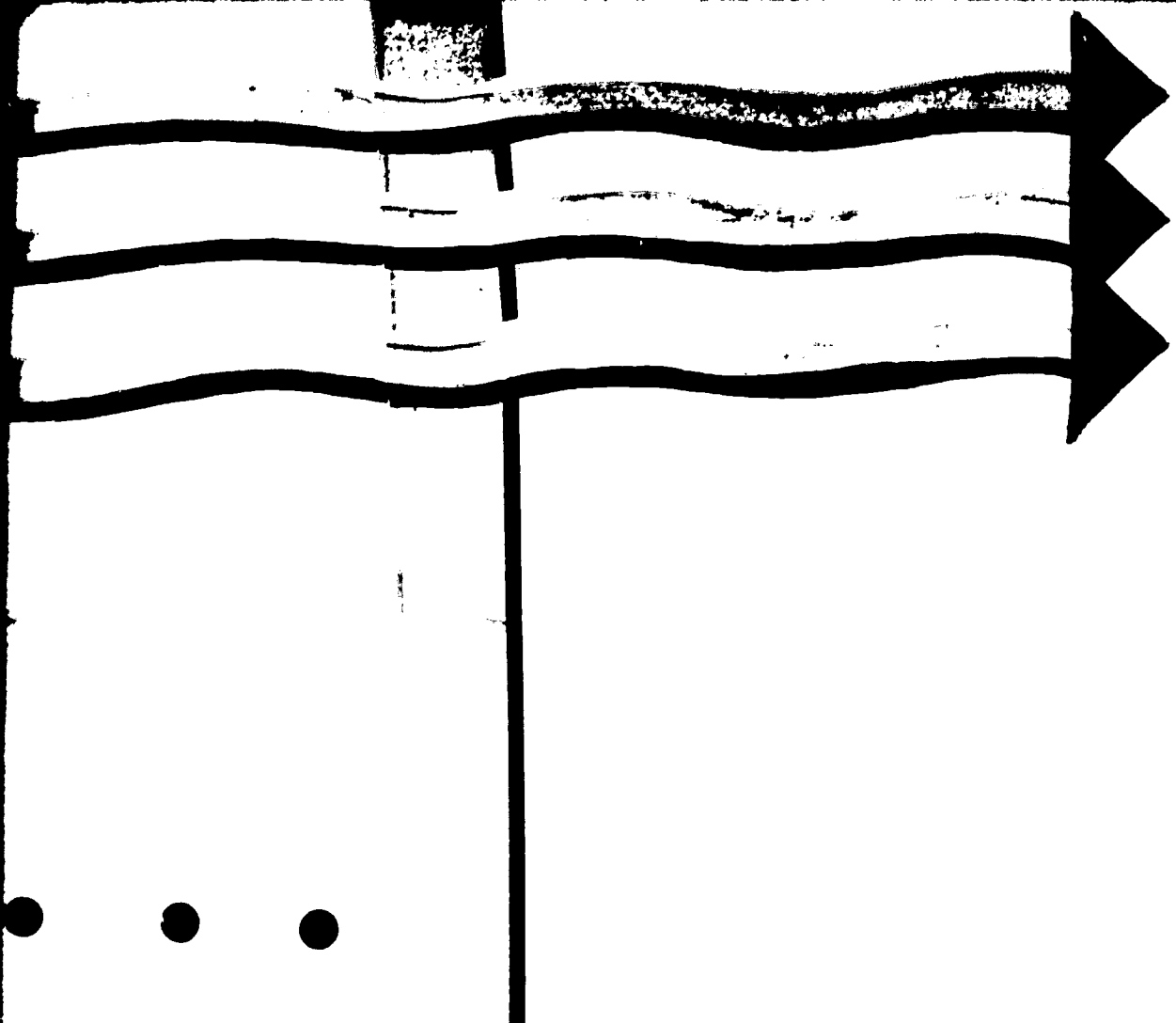

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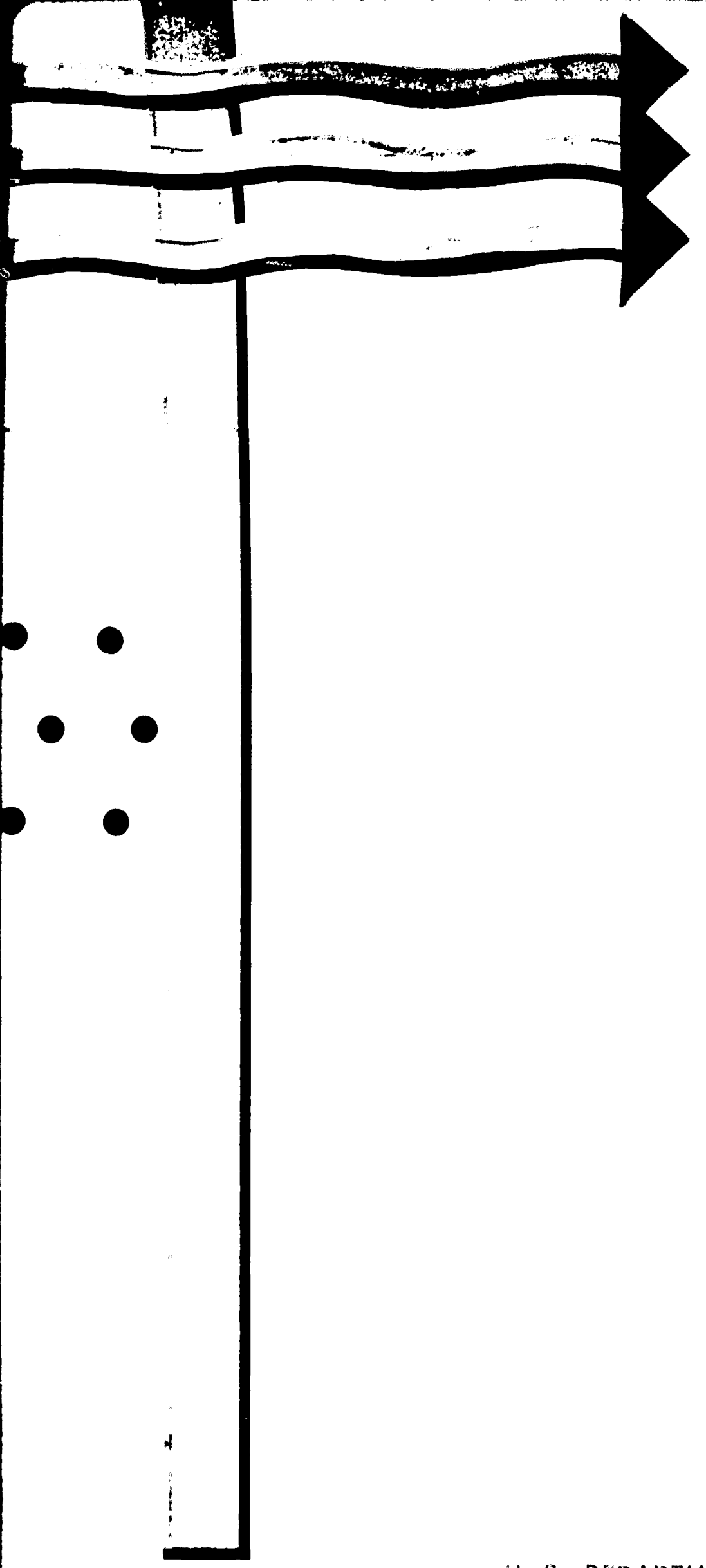

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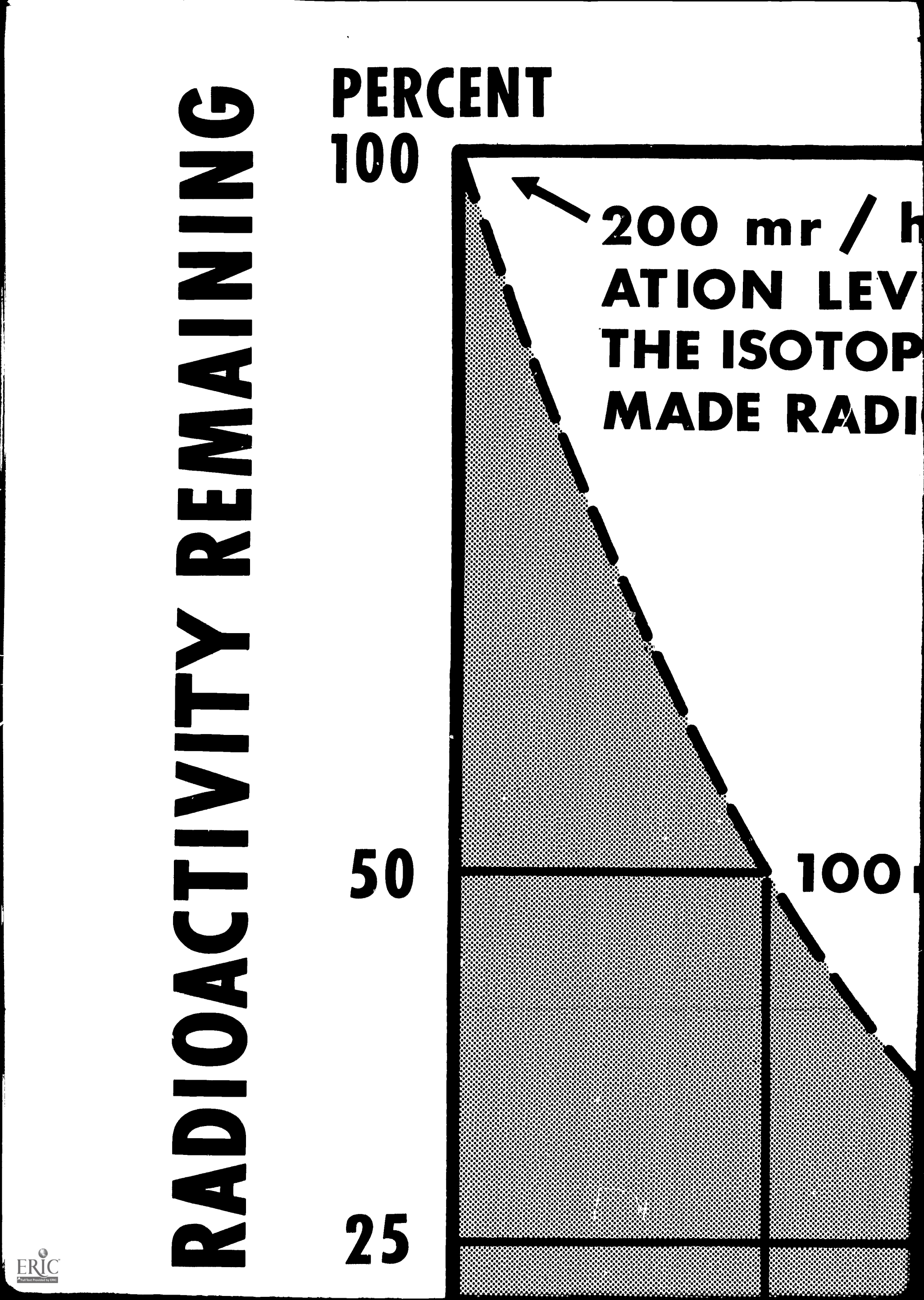
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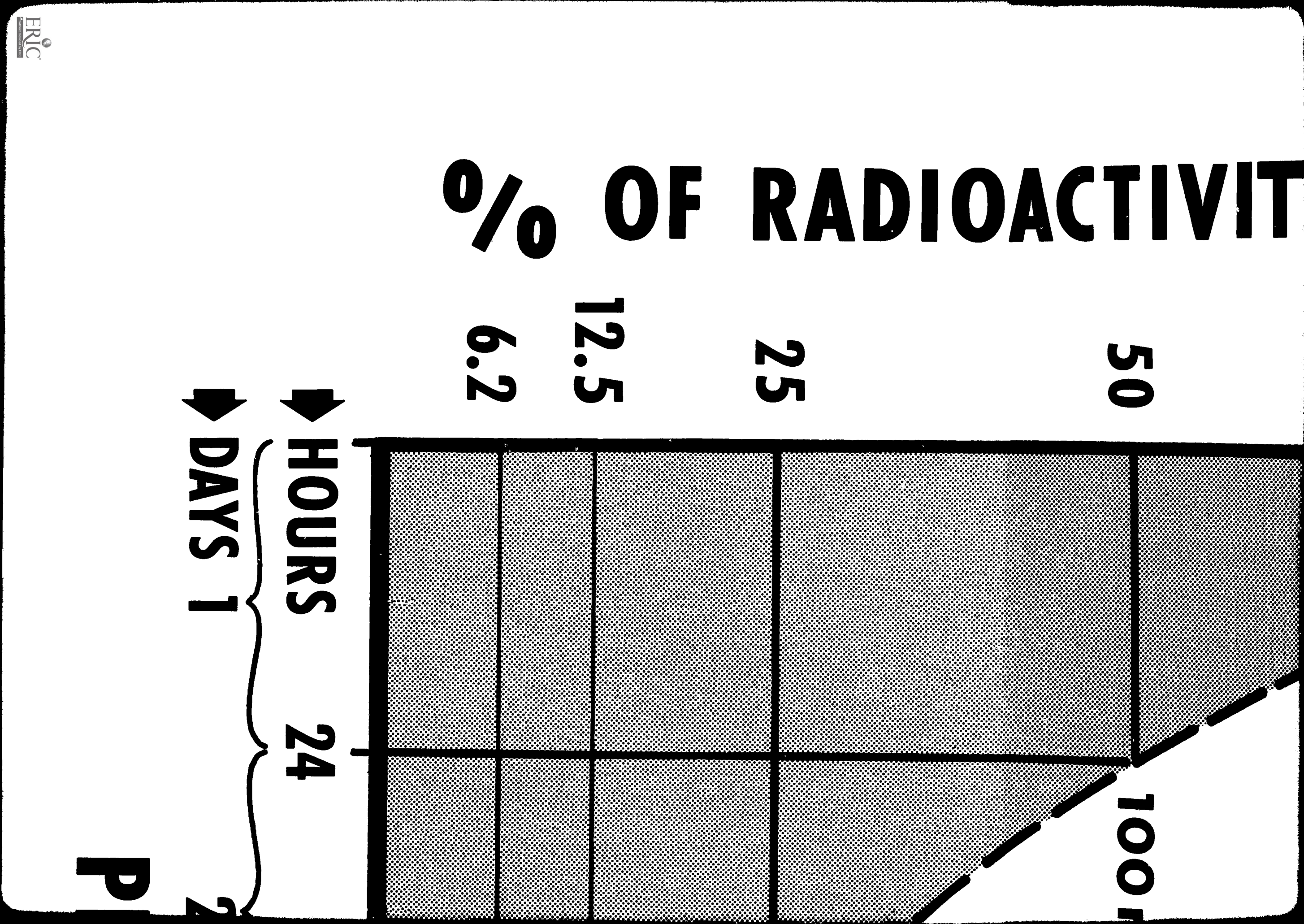

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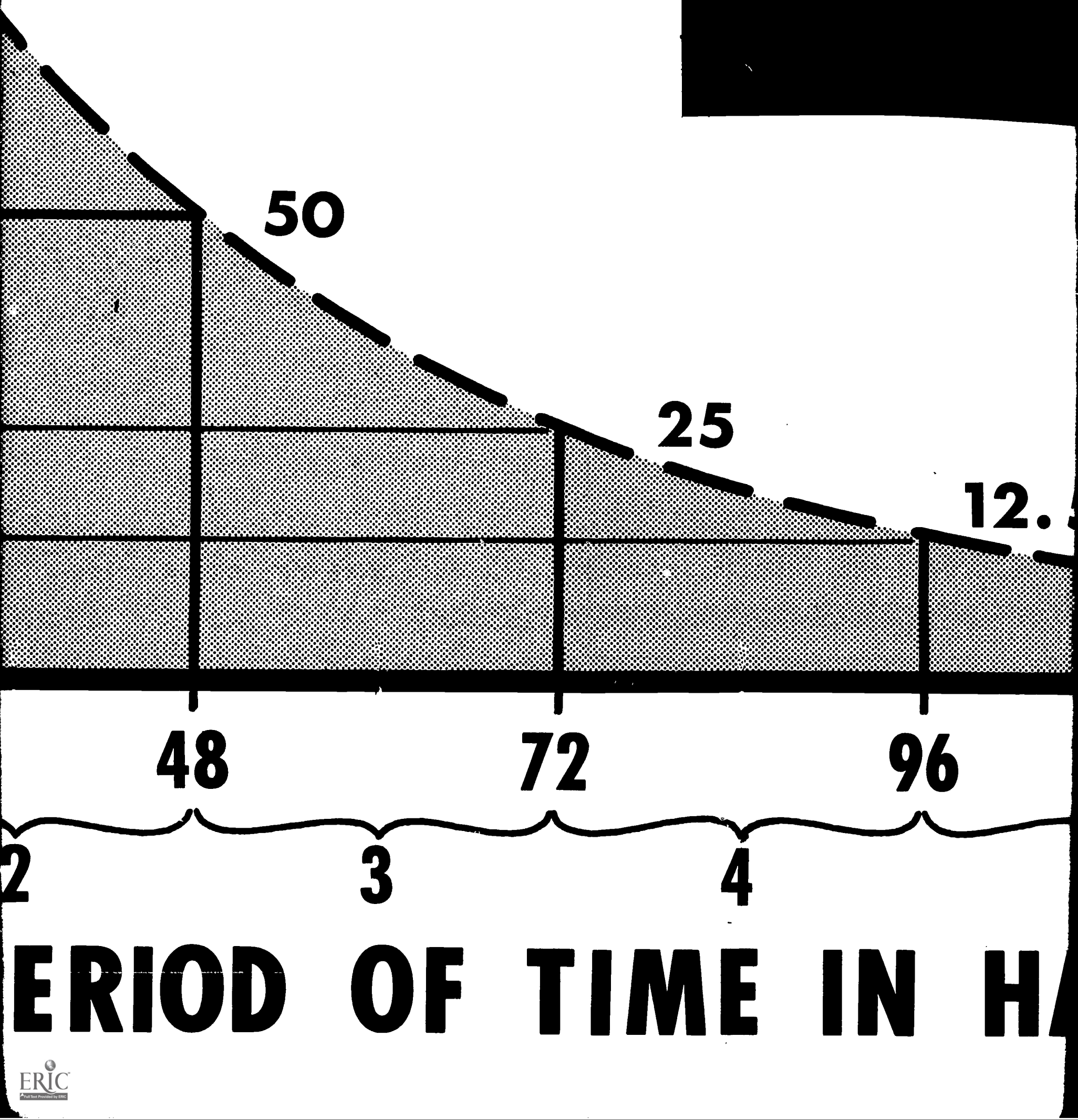

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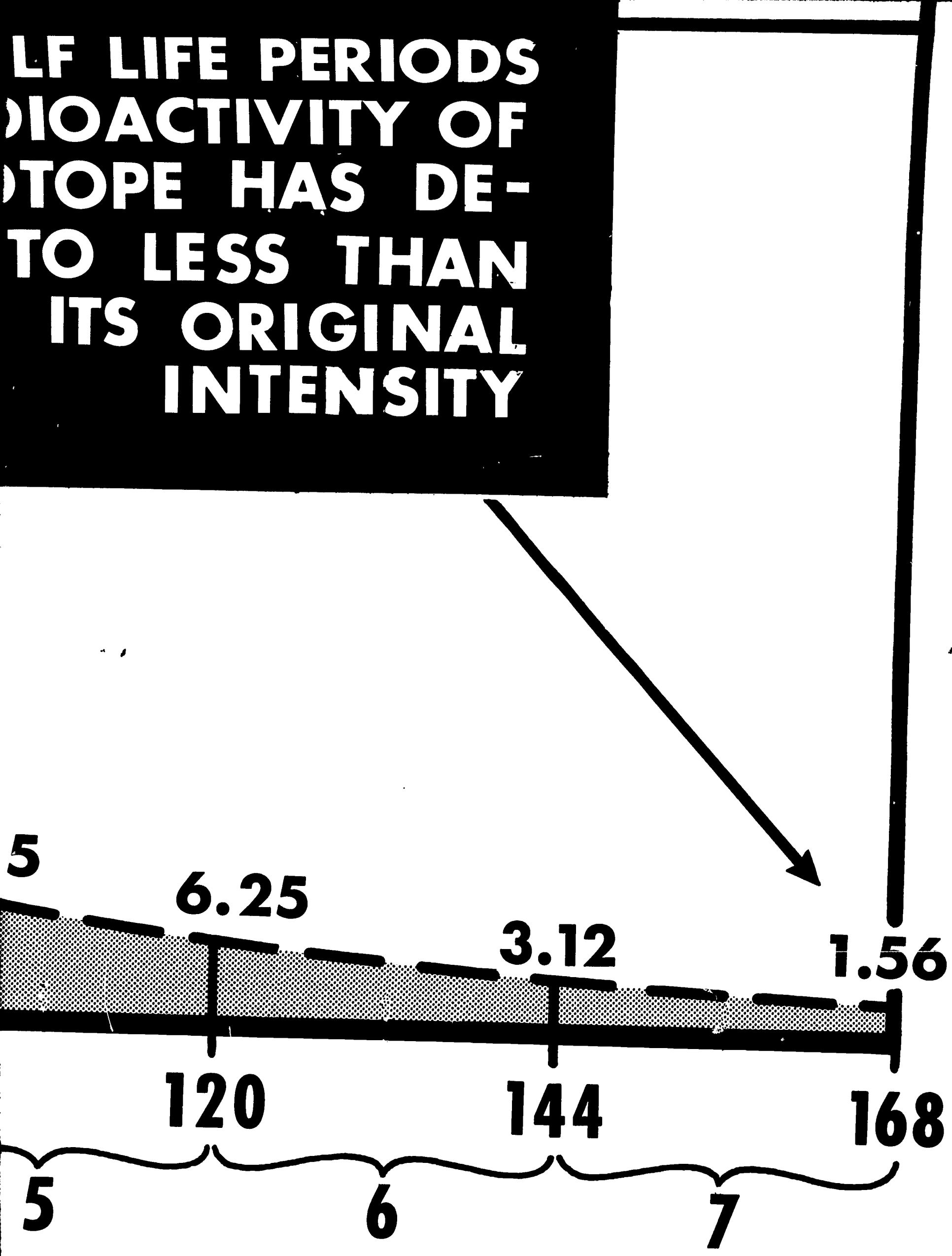

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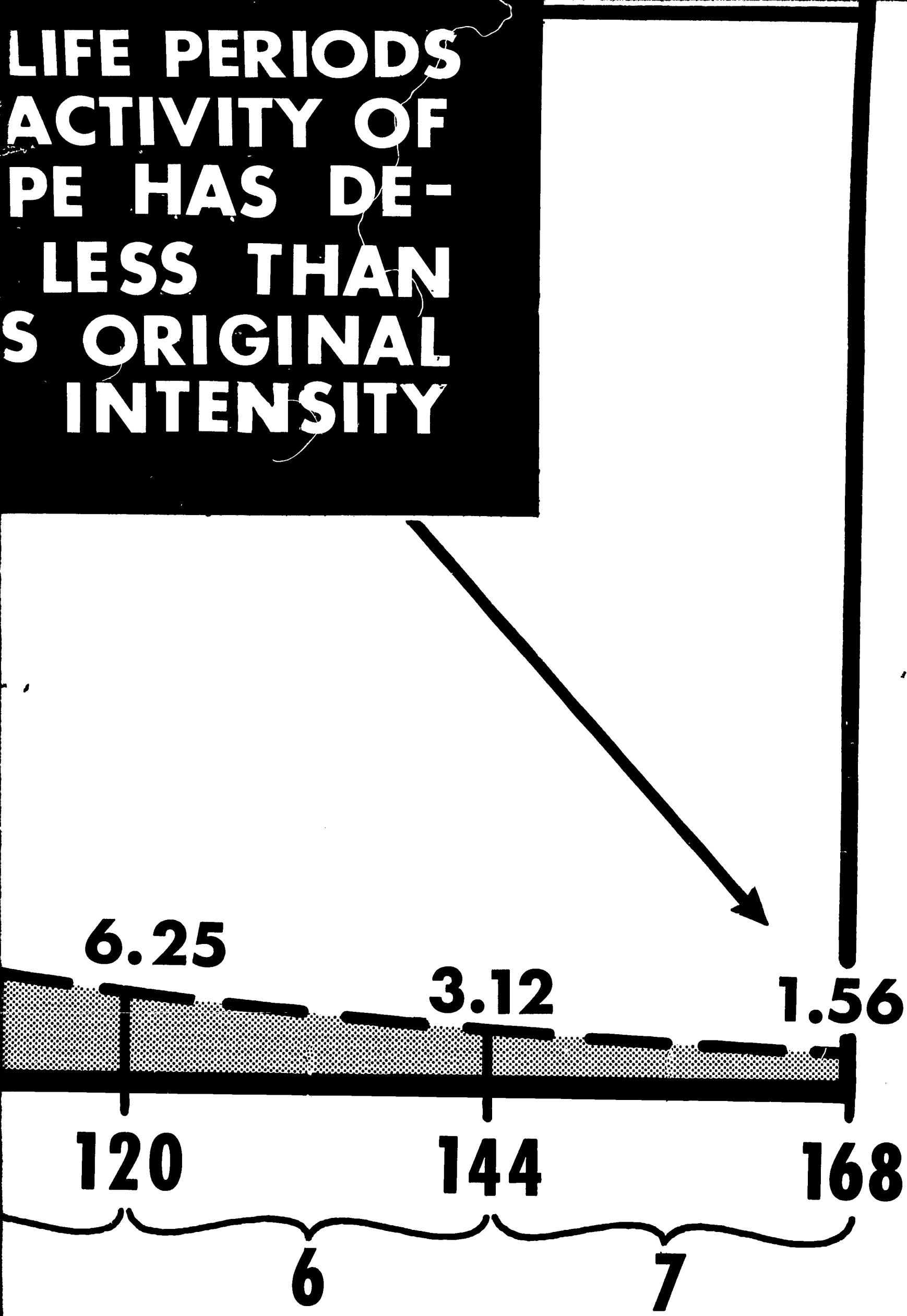

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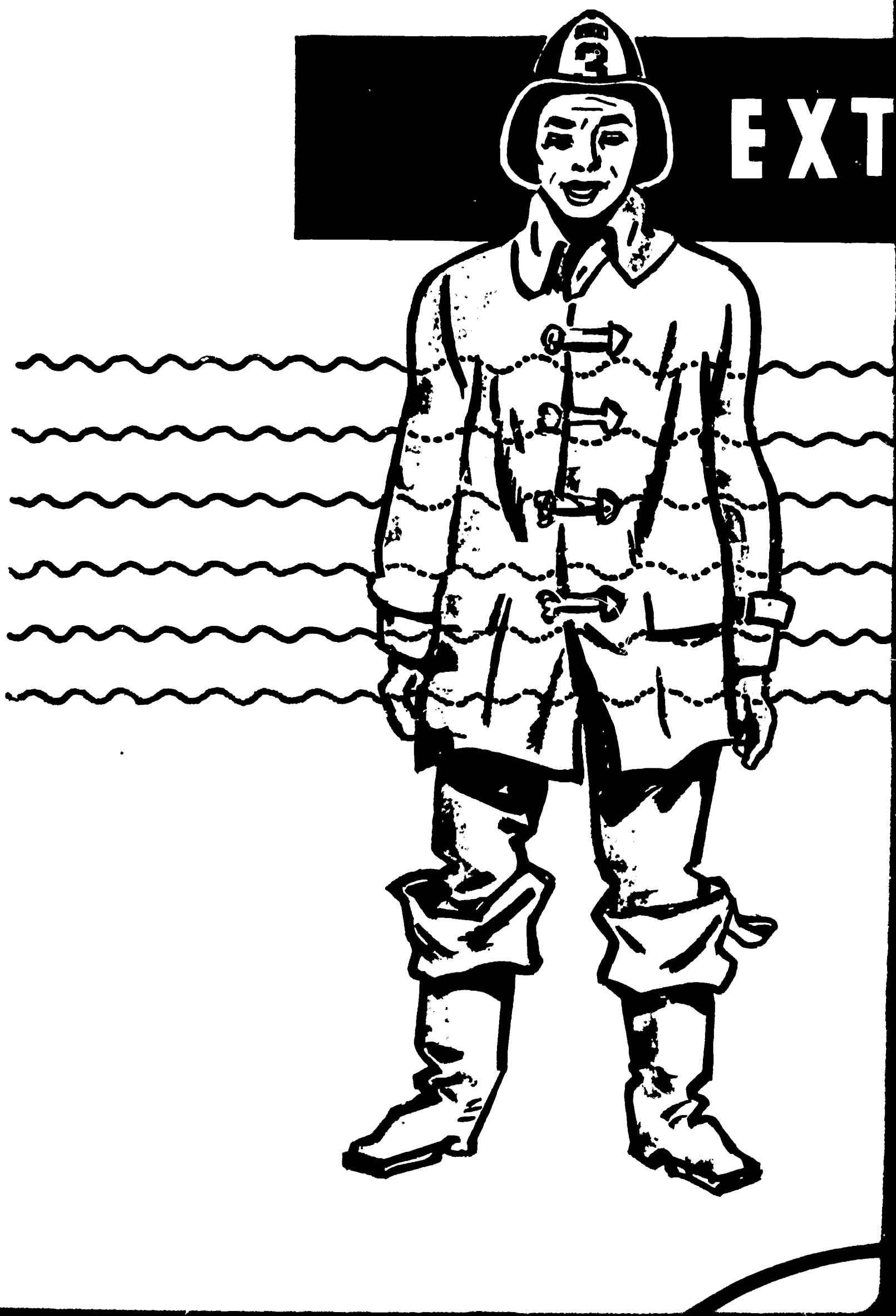
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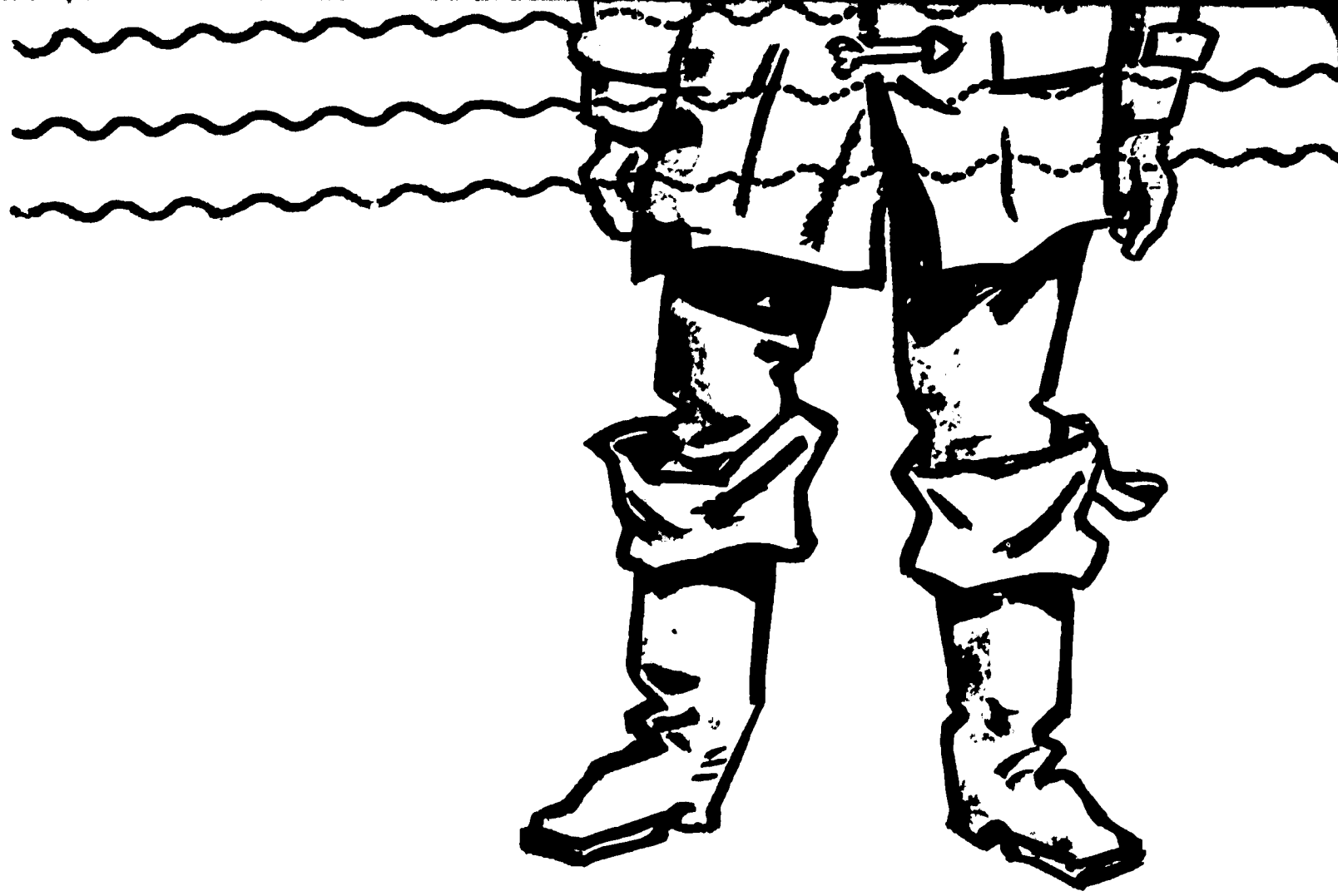

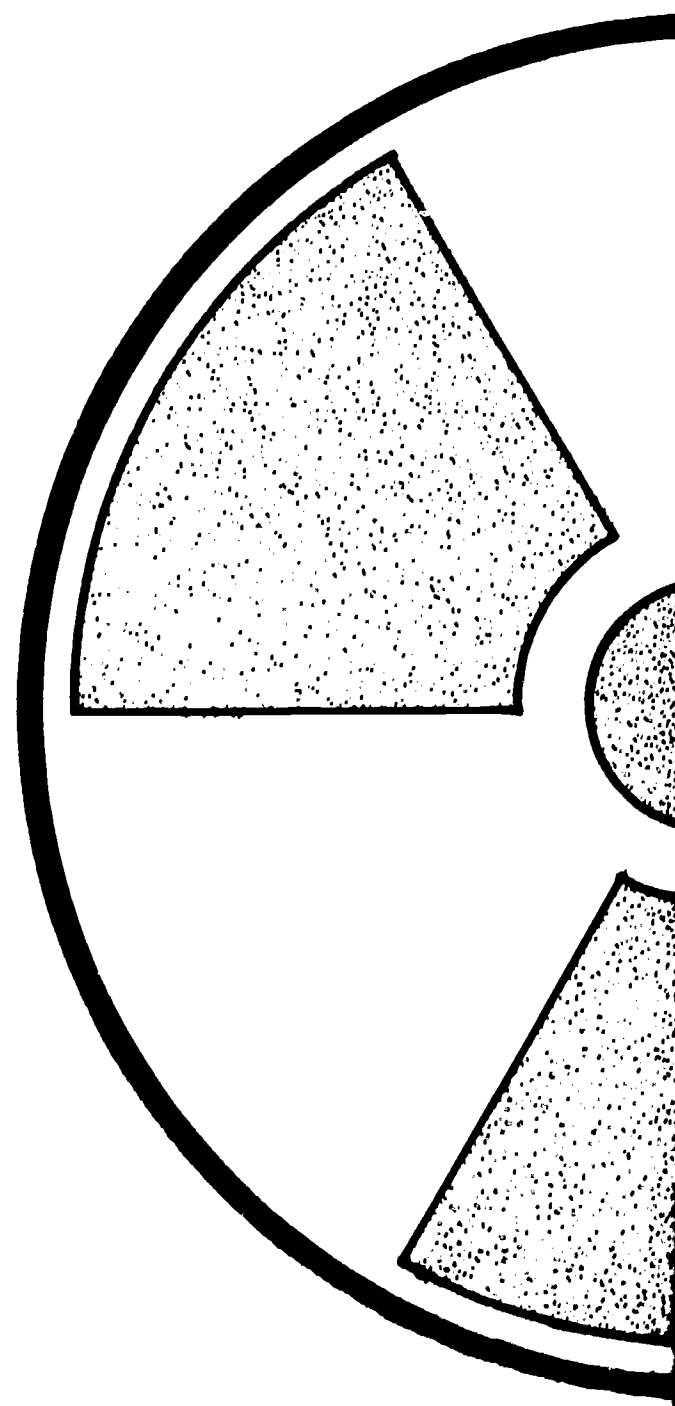

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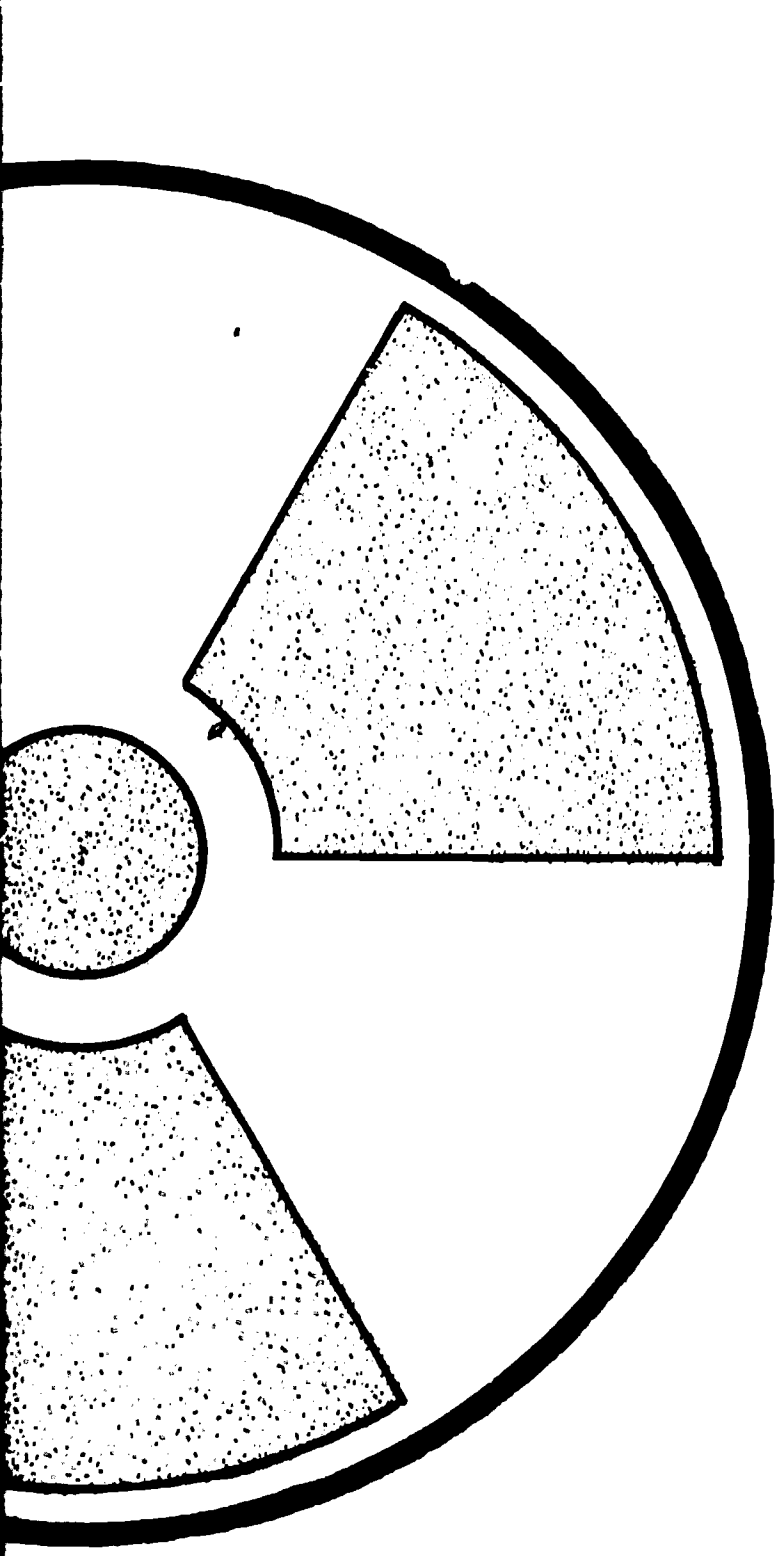

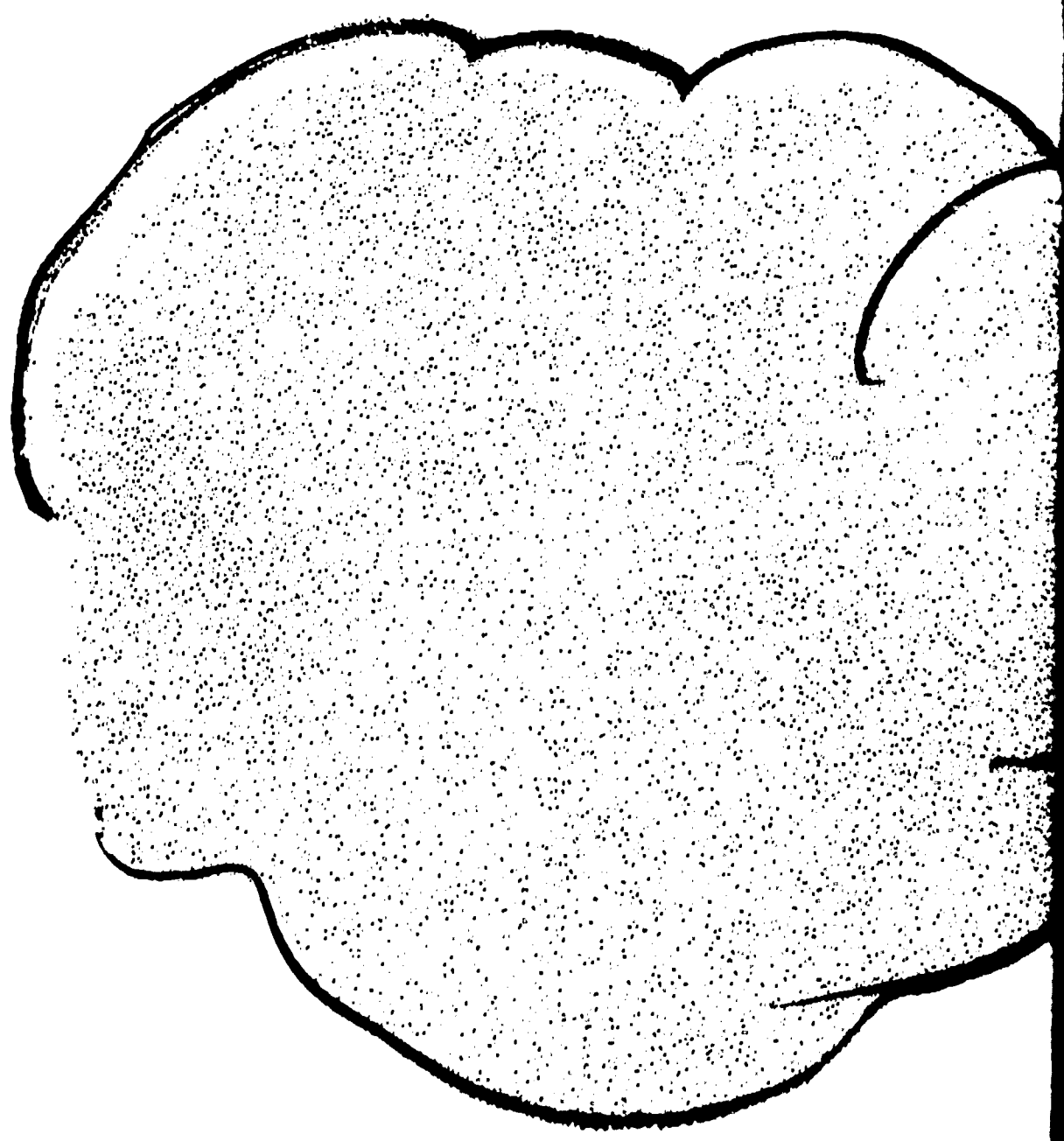

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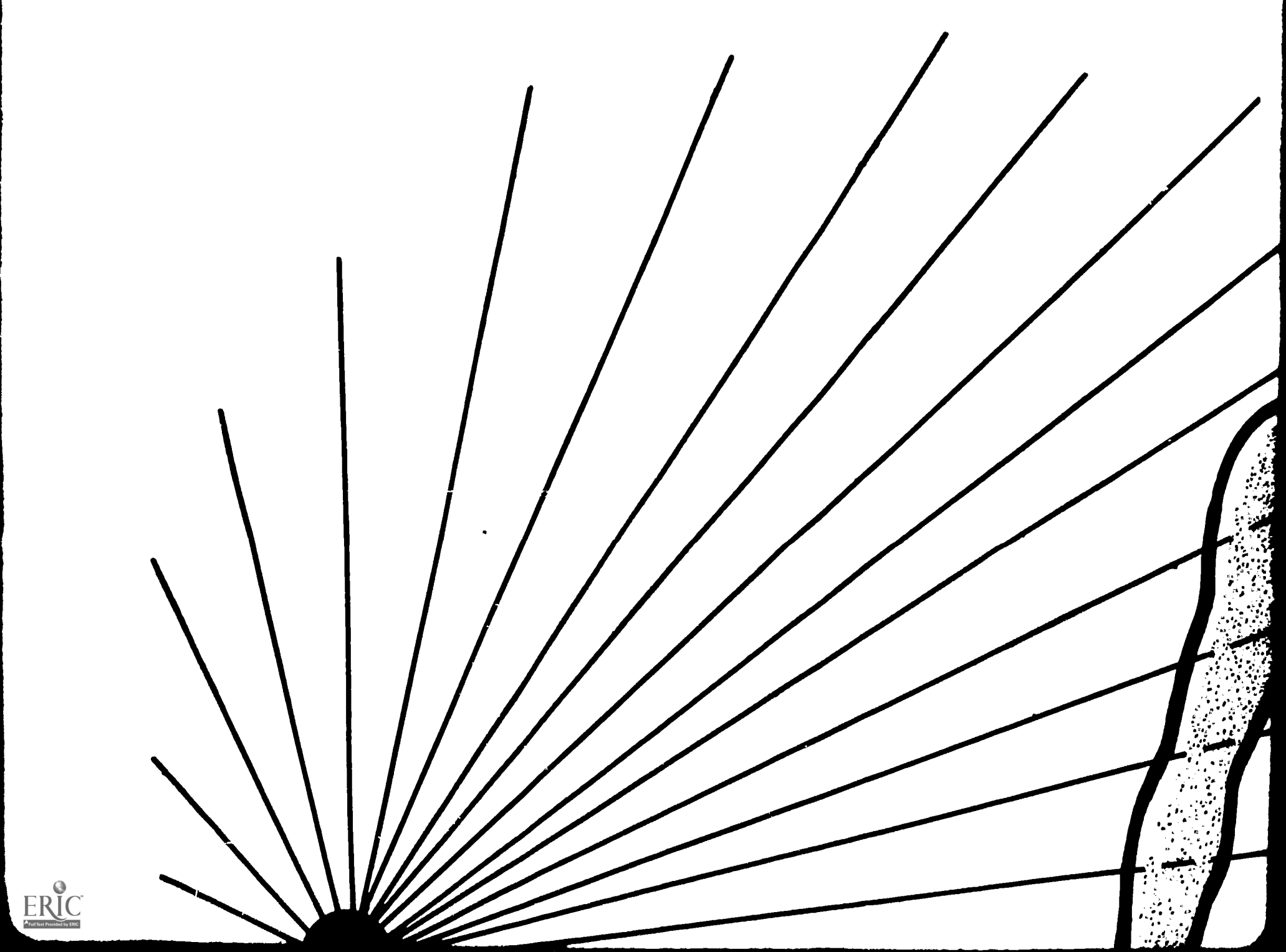
EFFECTS OF

LONG RANGE

GAMMA RAYS - GREAT



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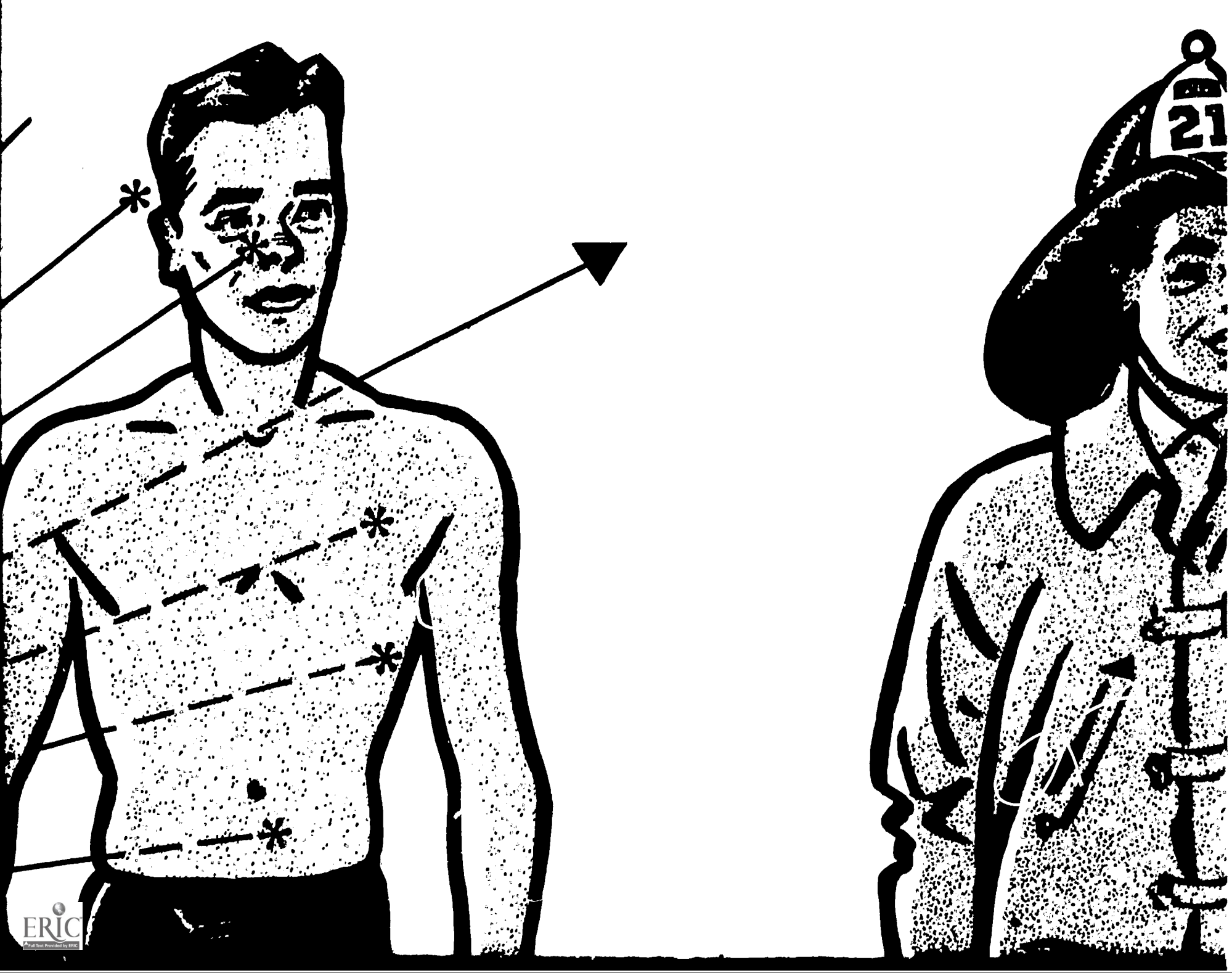

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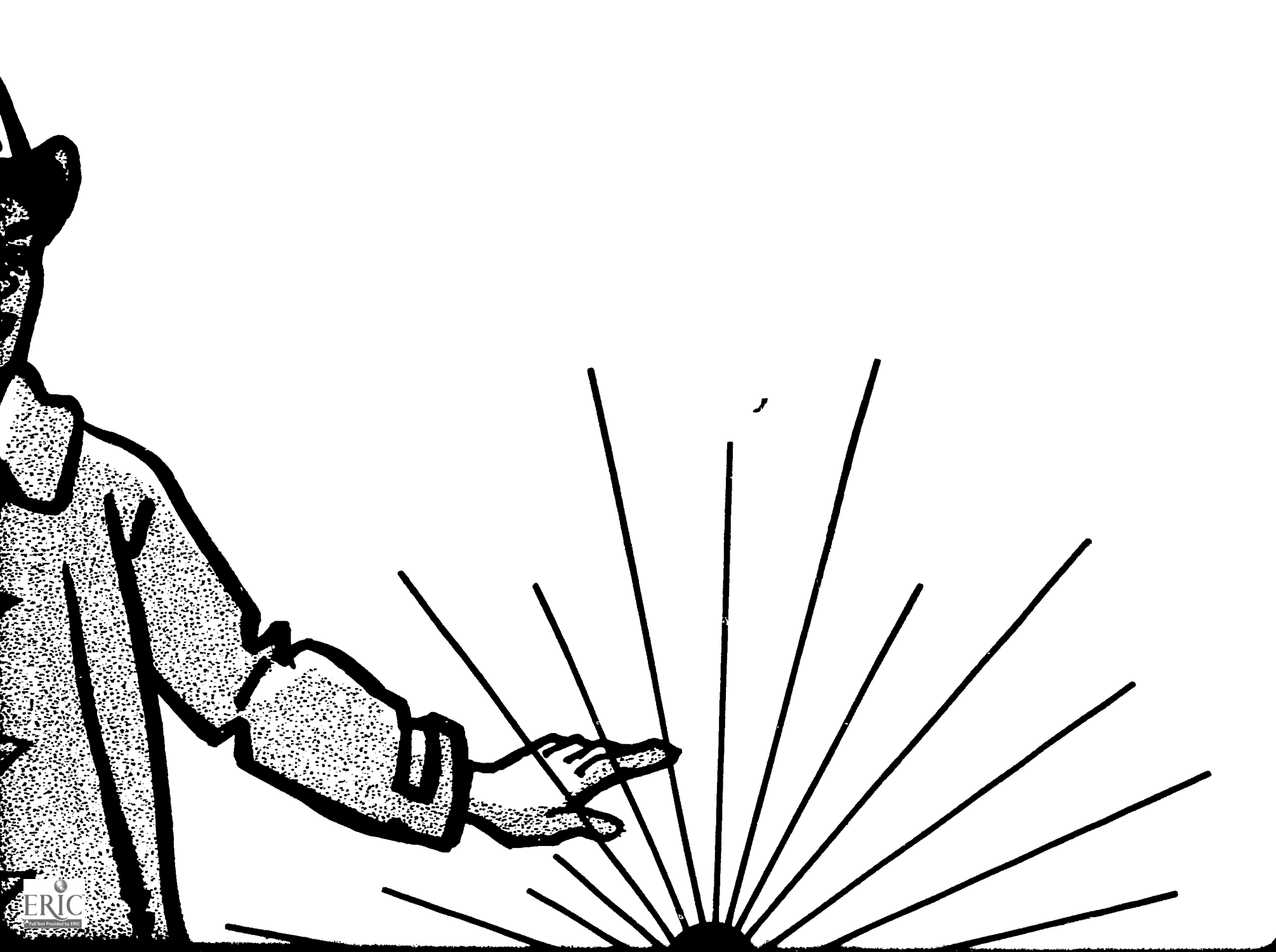

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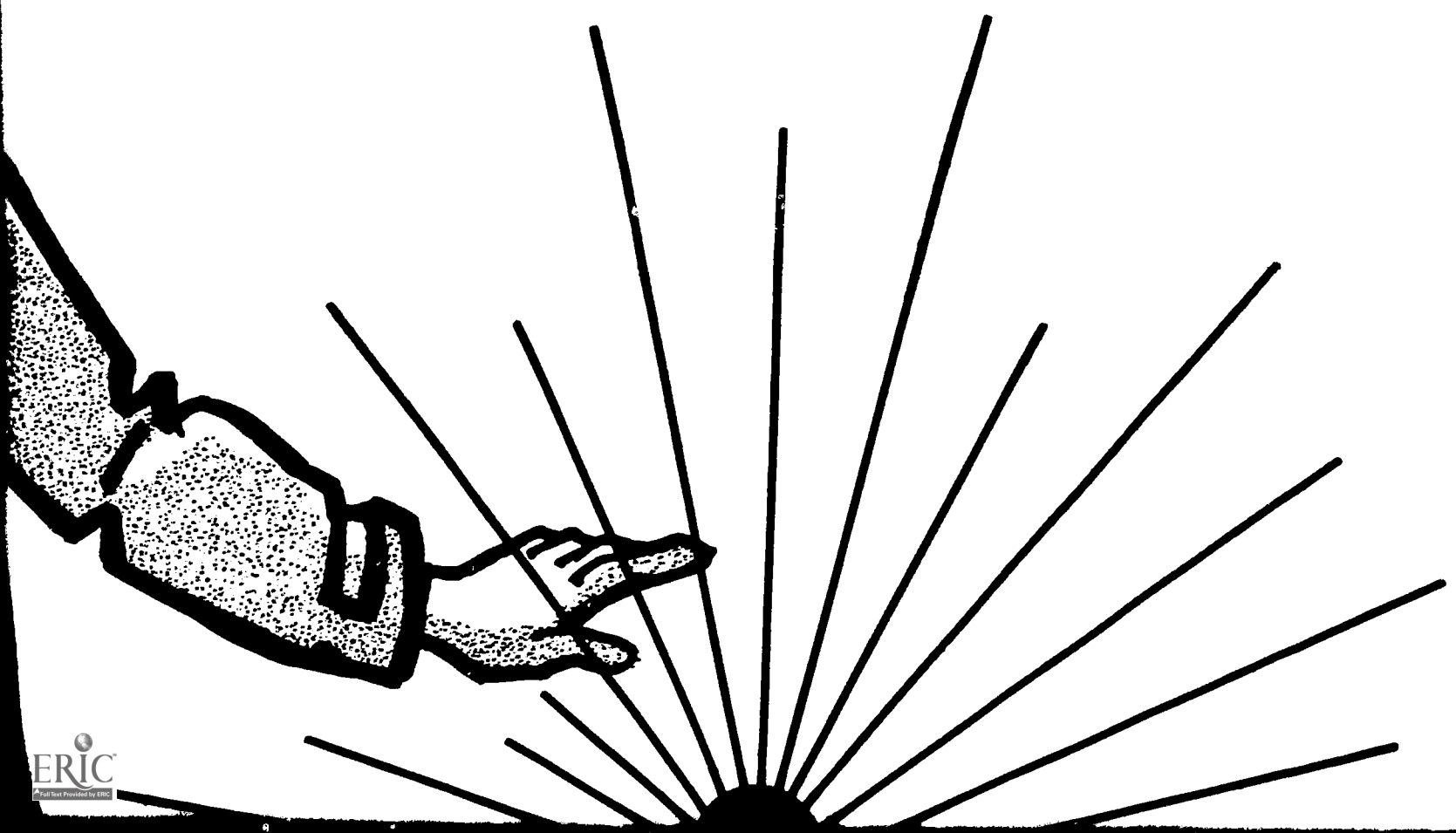

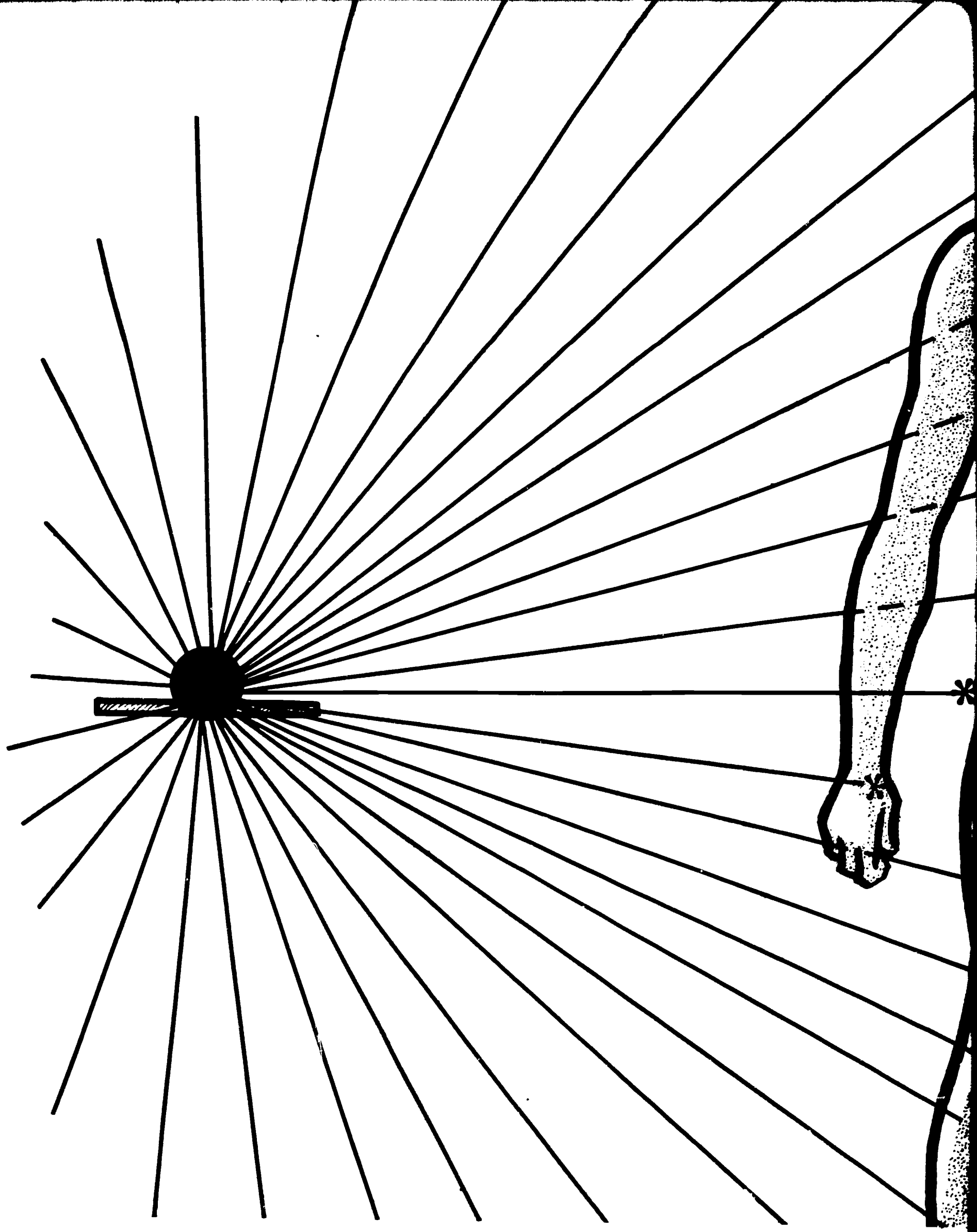

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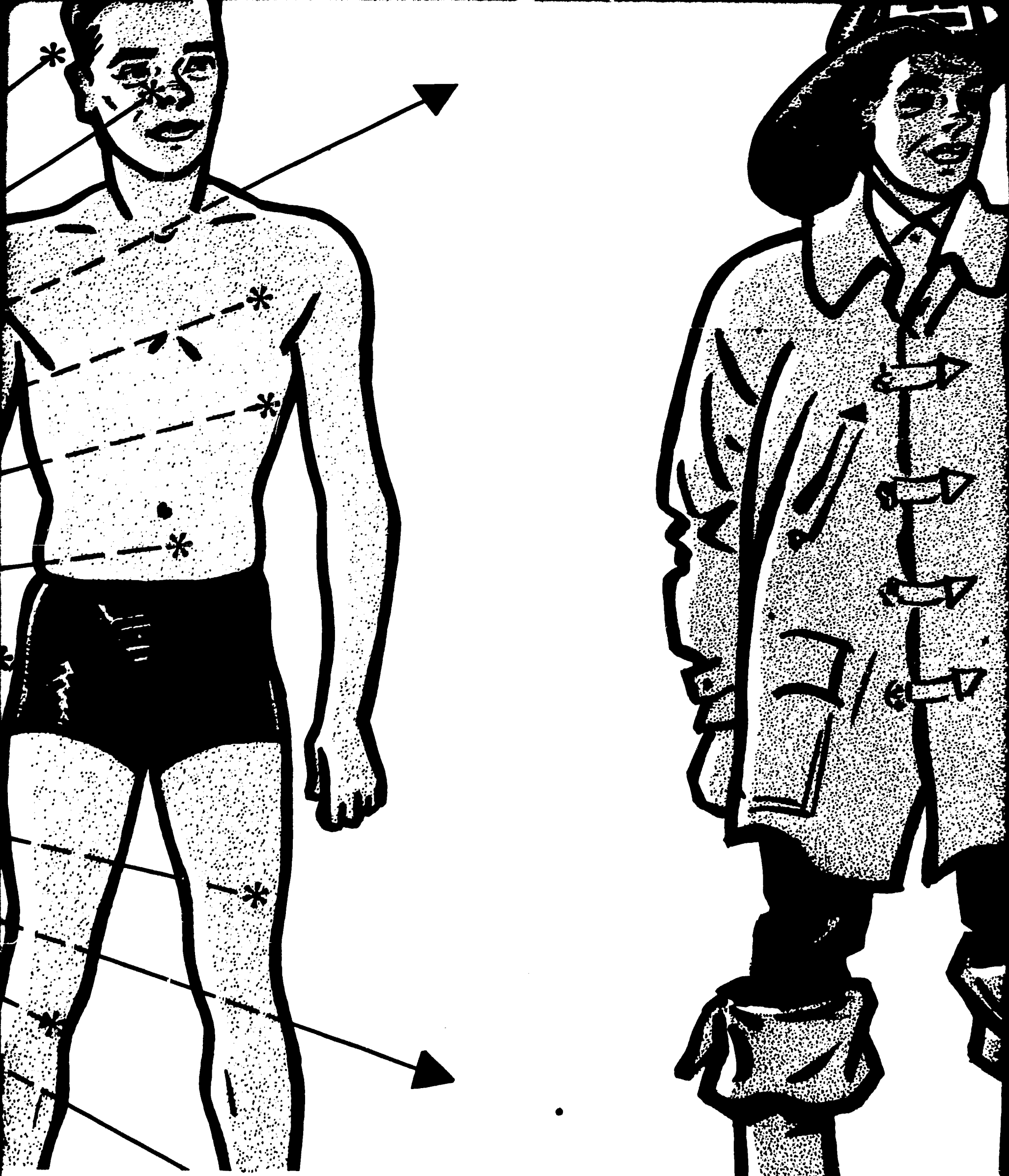

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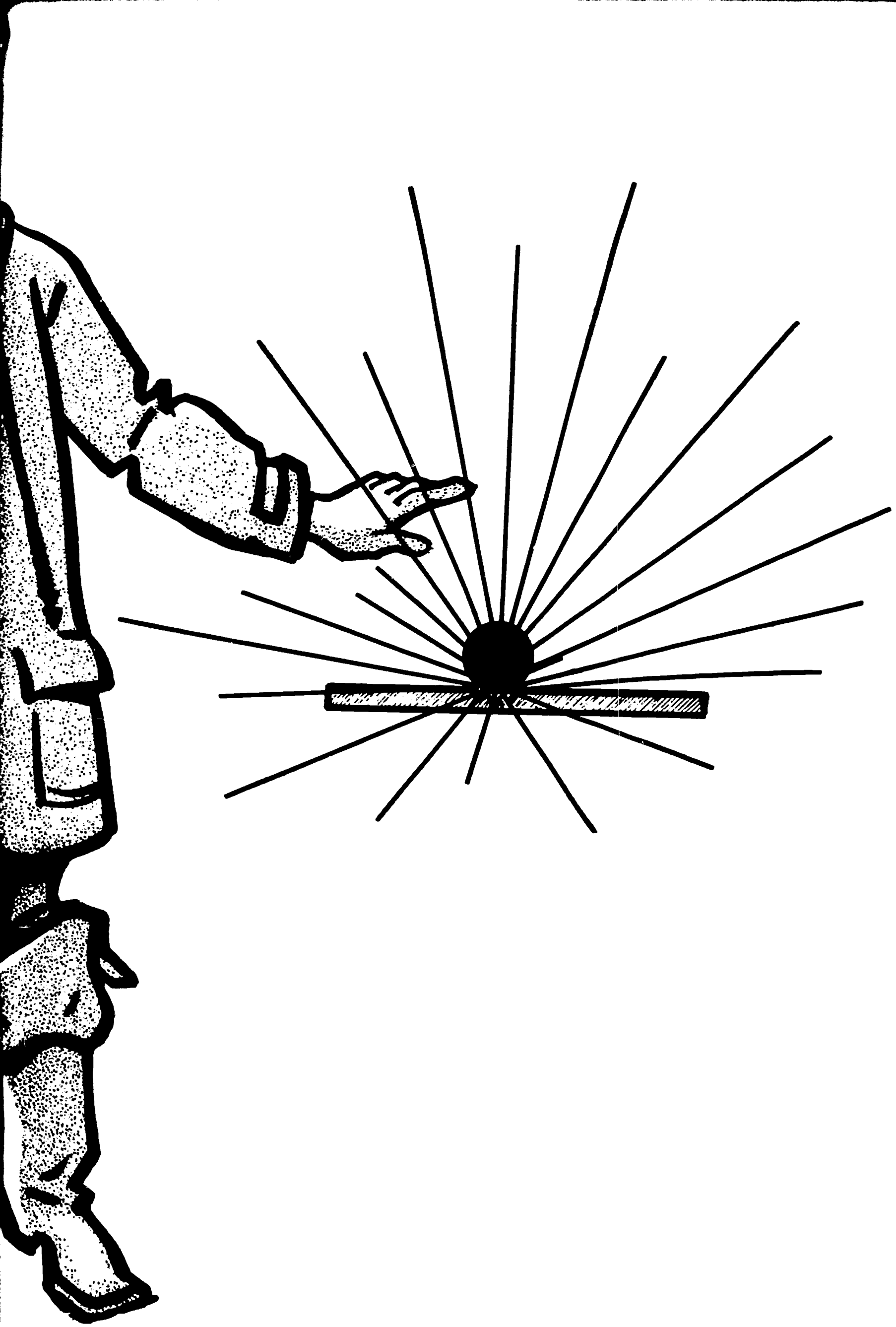

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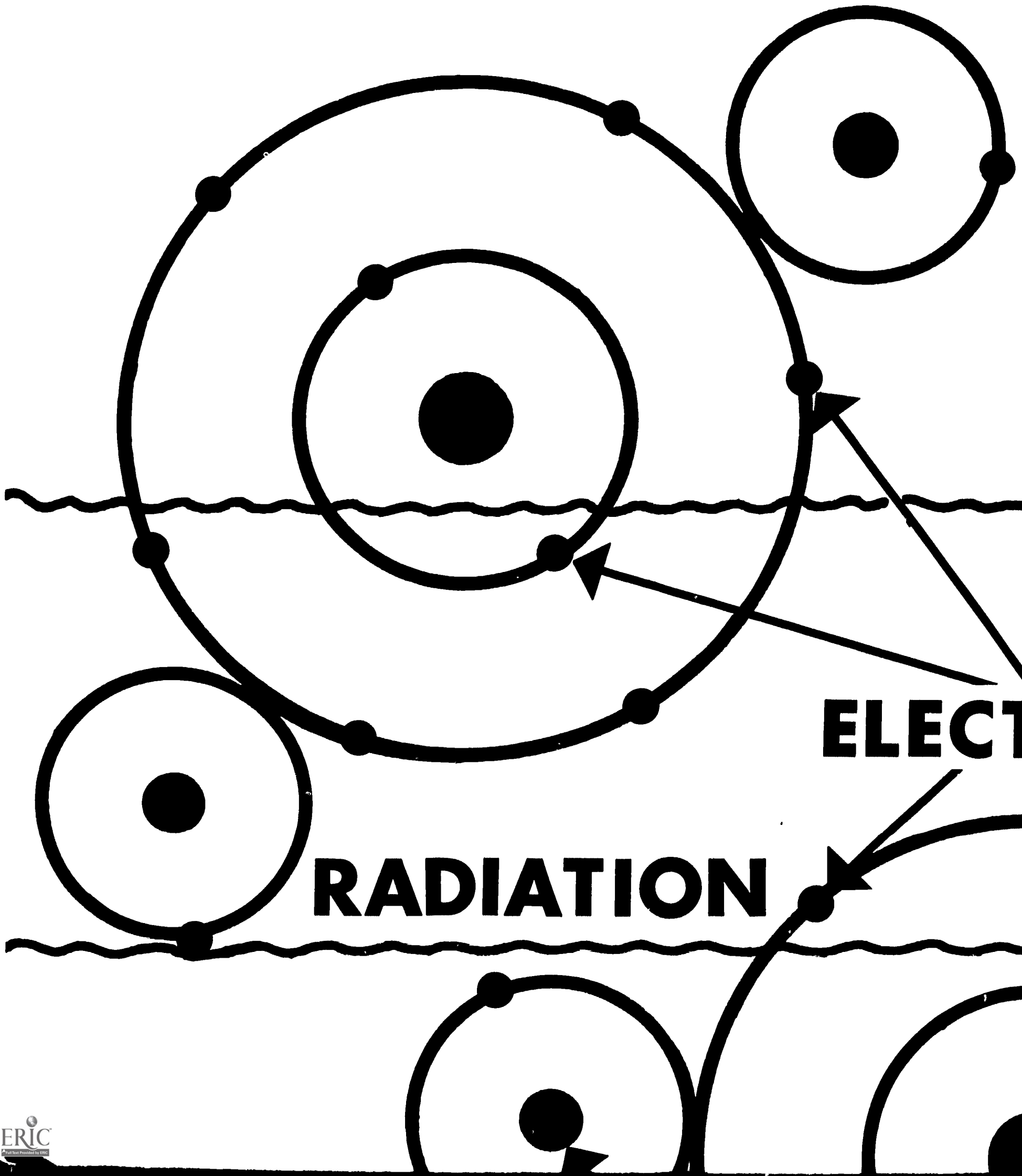
RADIATION EFFECT



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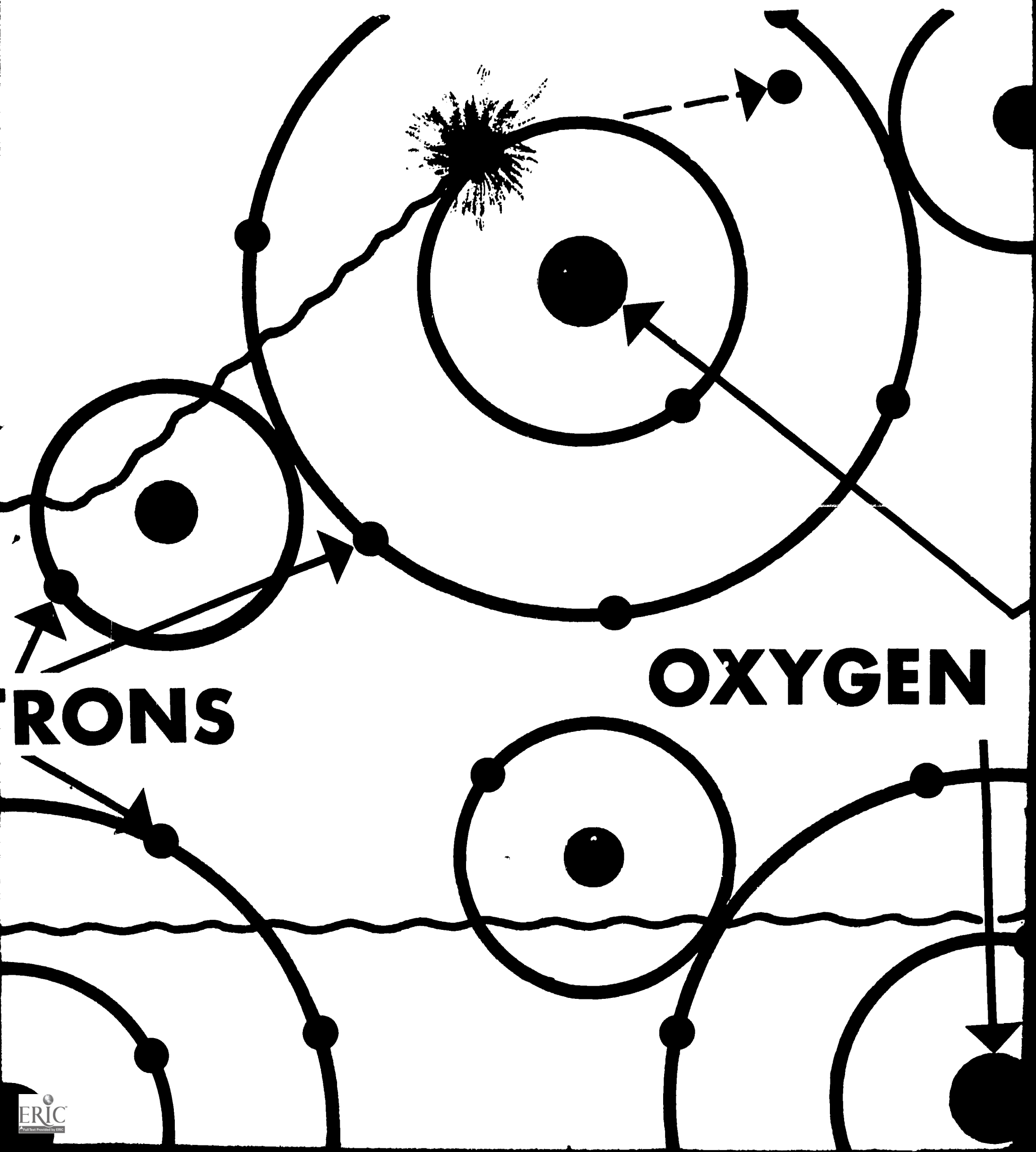

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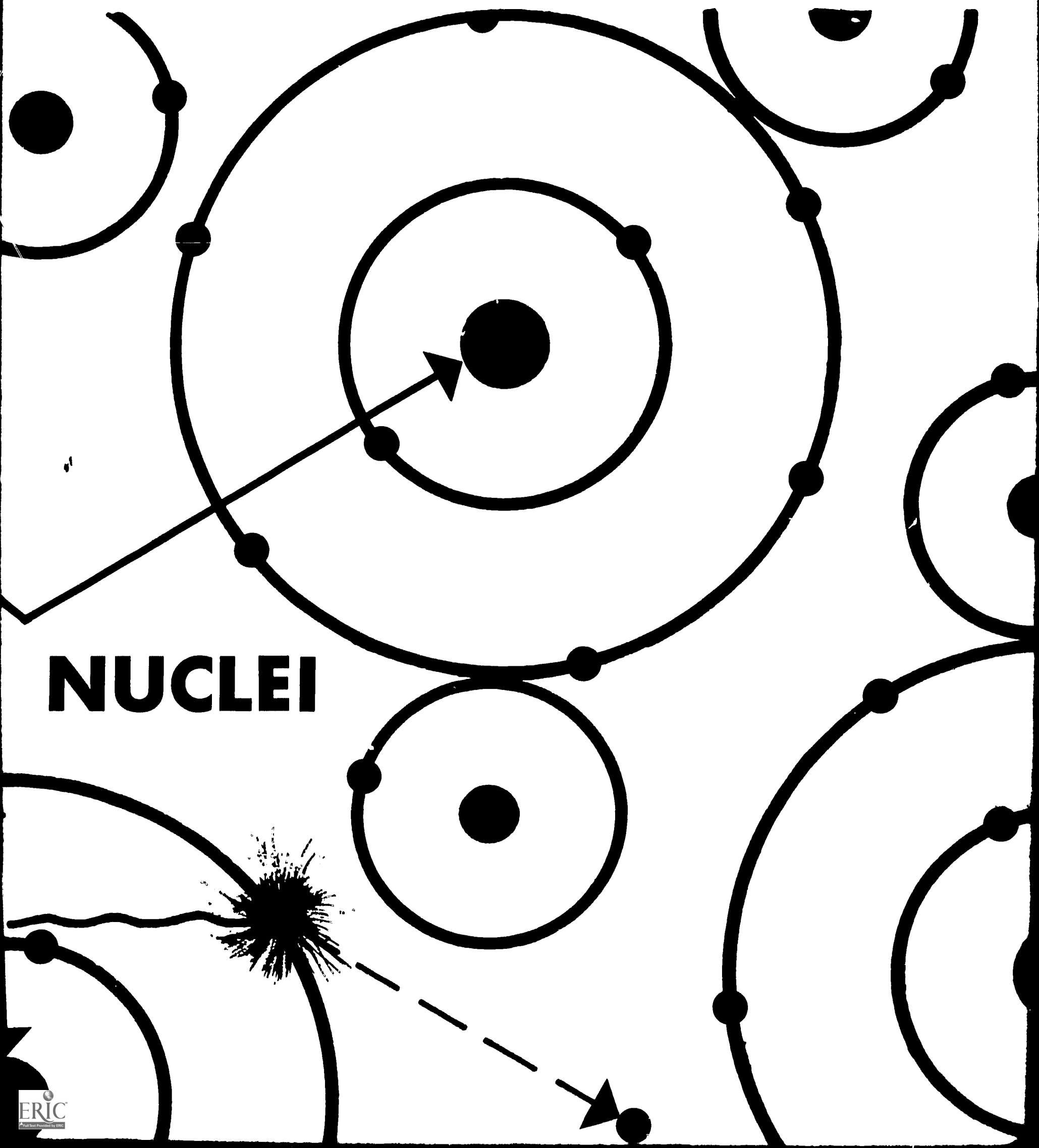

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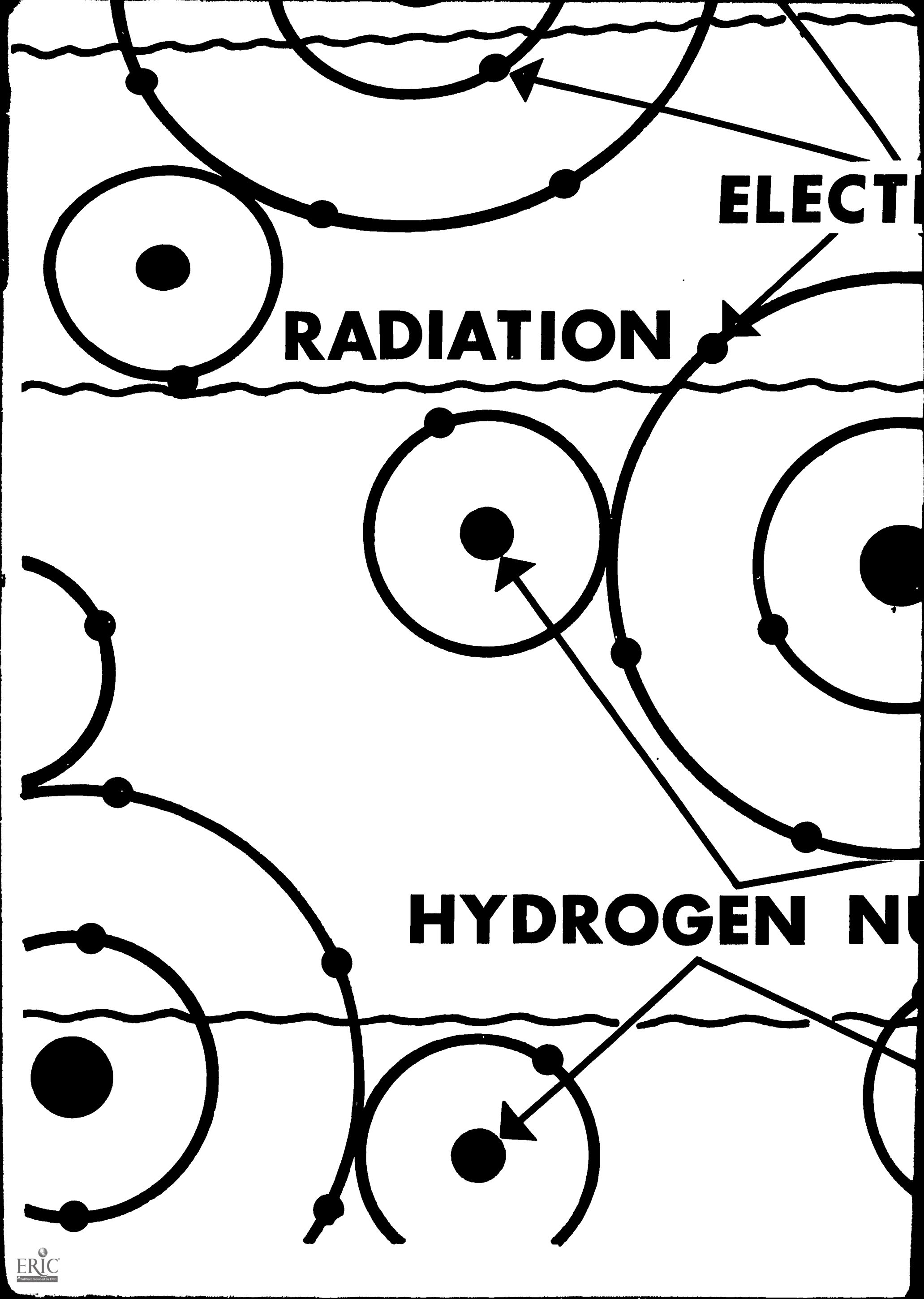
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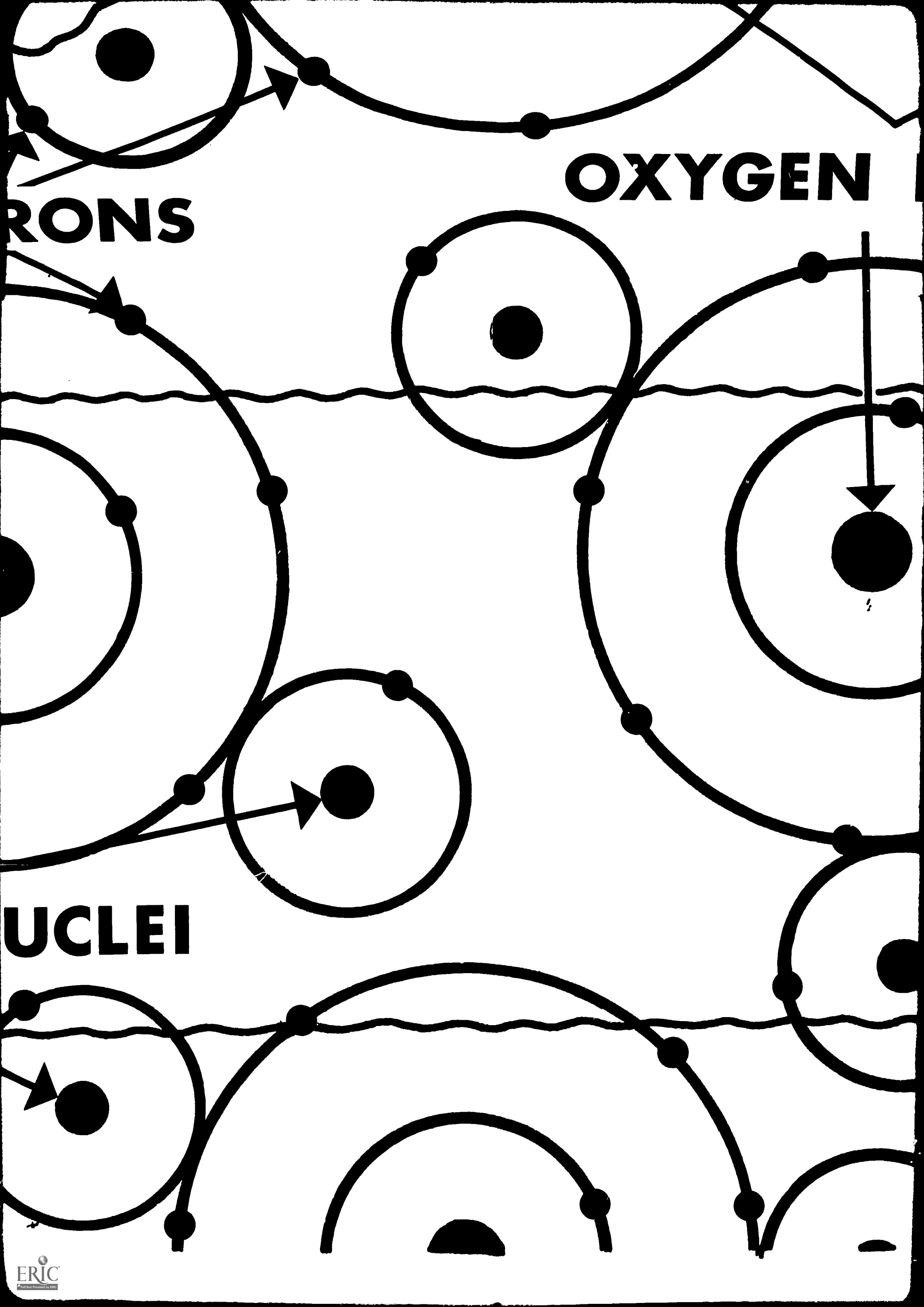
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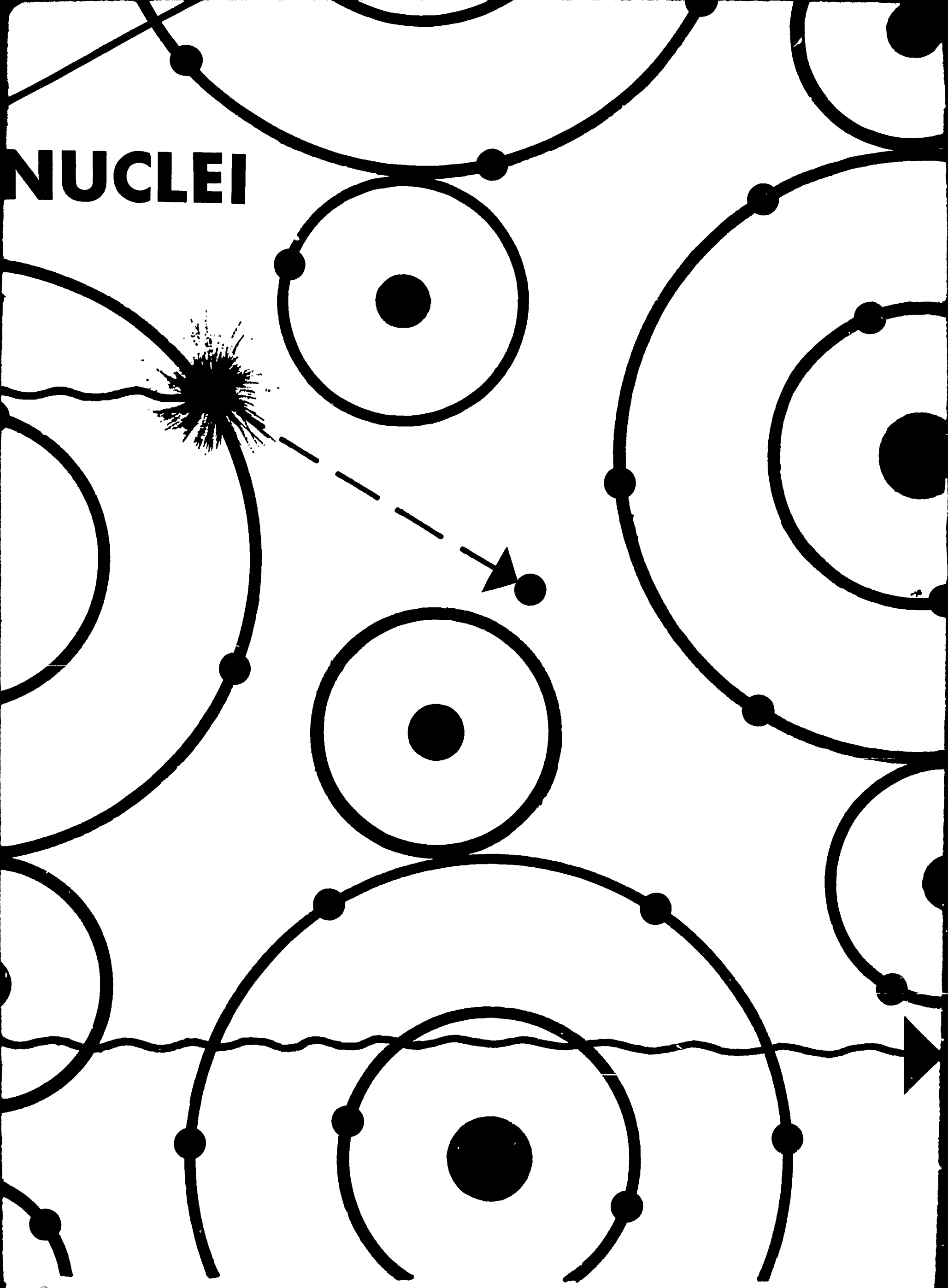

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SEVERE RADIATION SICKNES

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WITH UP TO 50 DEATHS FOR EXPOSED

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Peacetime Radiation Hazards

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n the Fire Service: Basic Course

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NO. REMS BANKED

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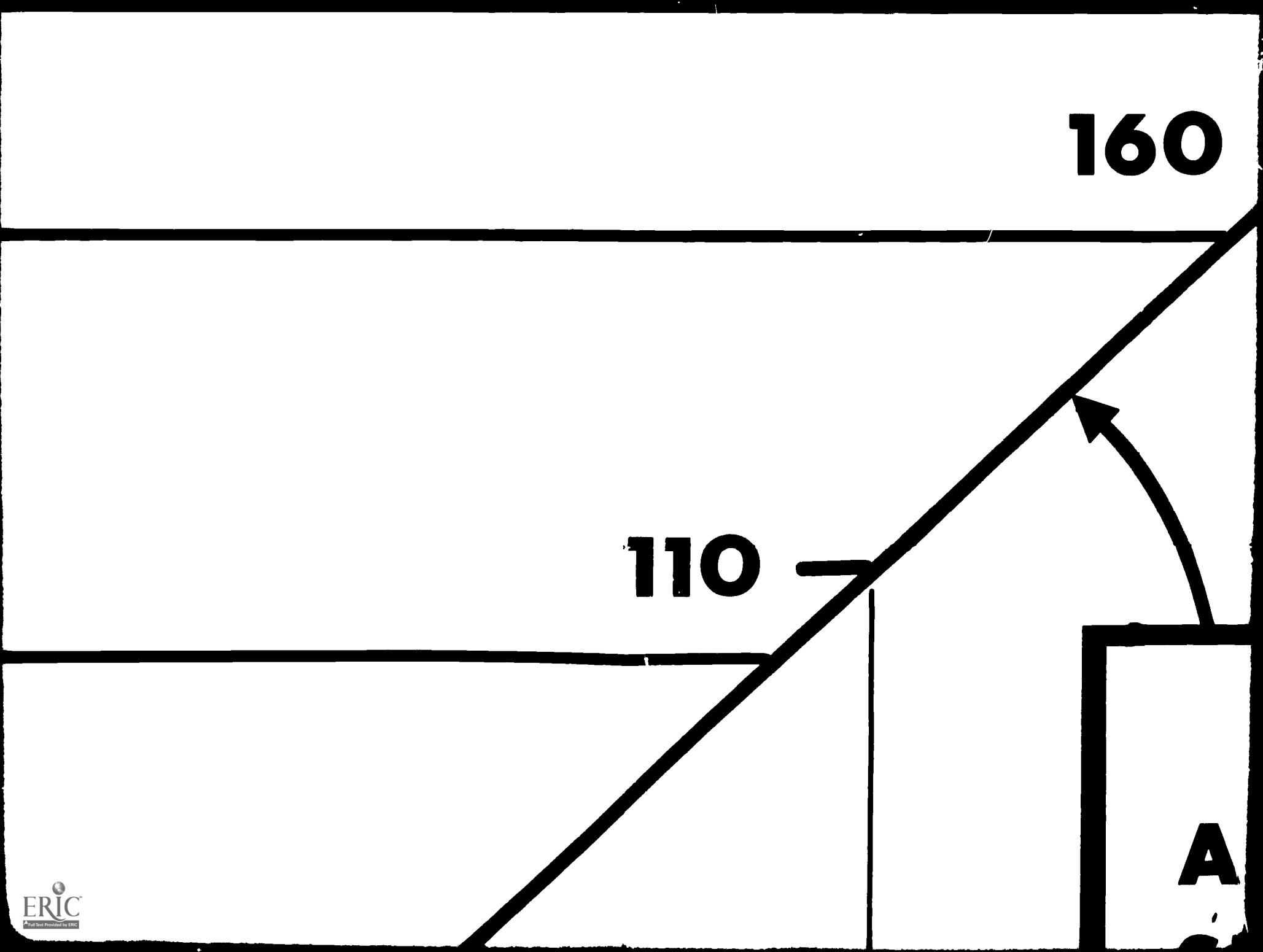

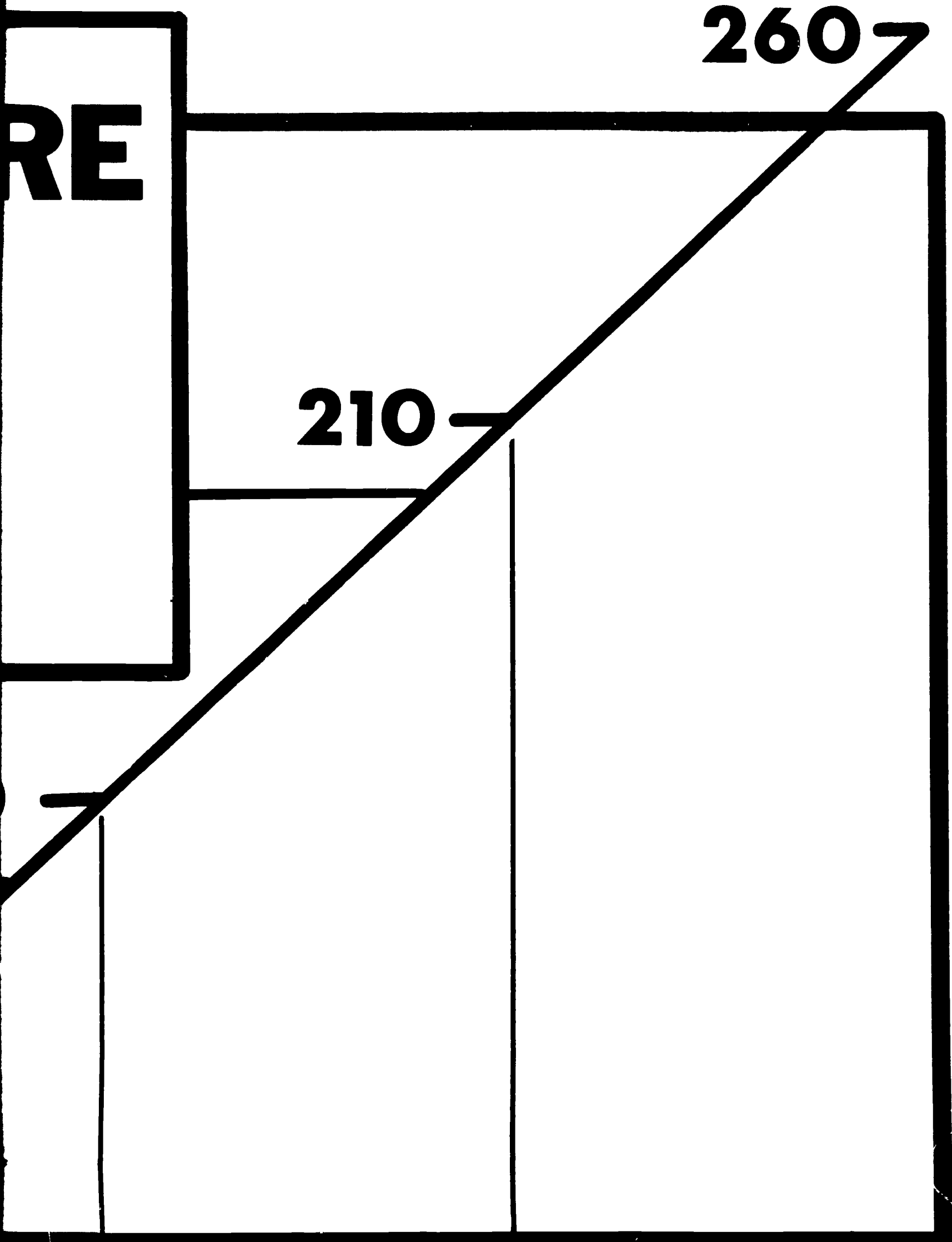

RADIATION WORKERS
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10 REMS BANKED

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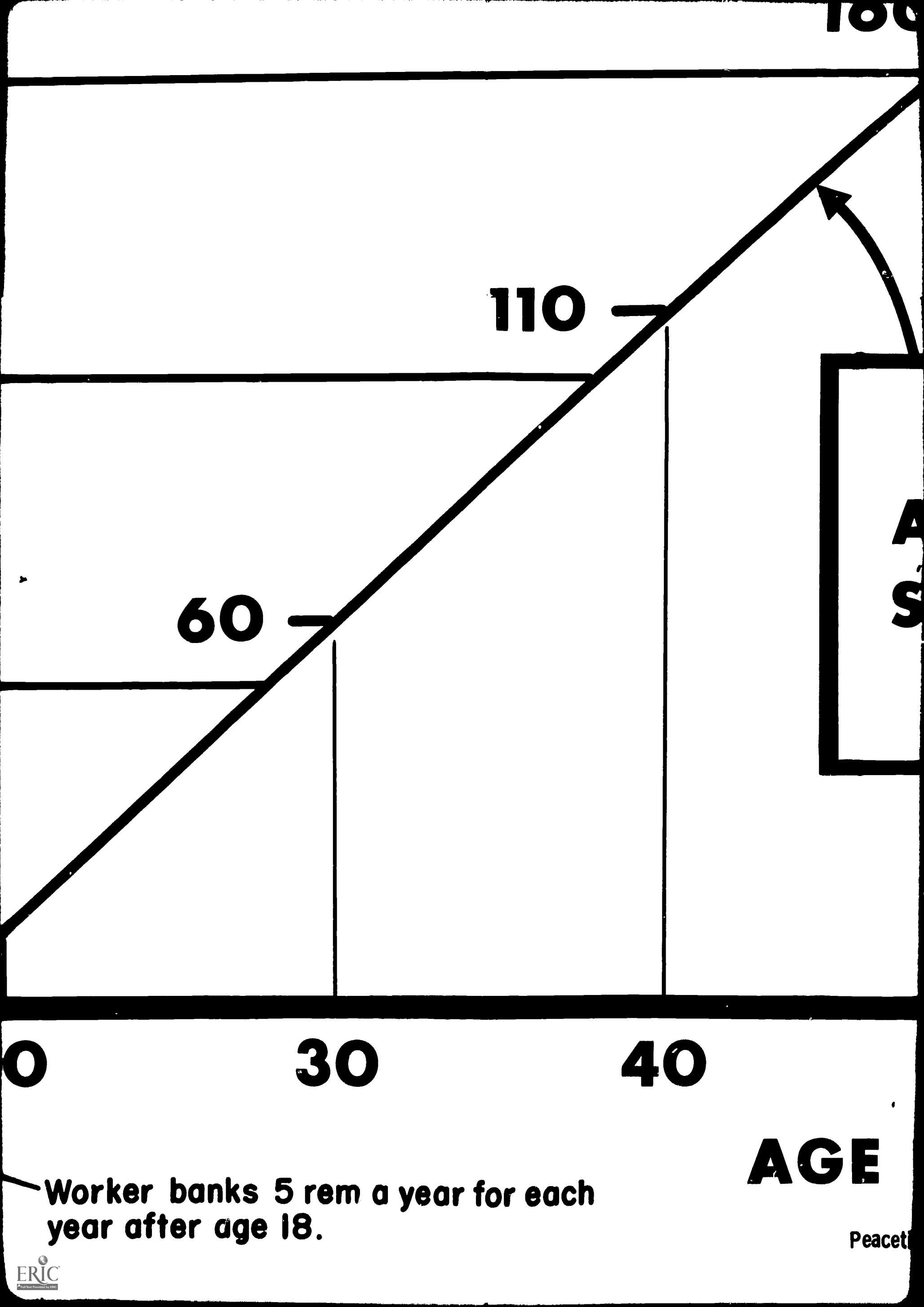
No manmade radiation exposures except for necessary medical procedures.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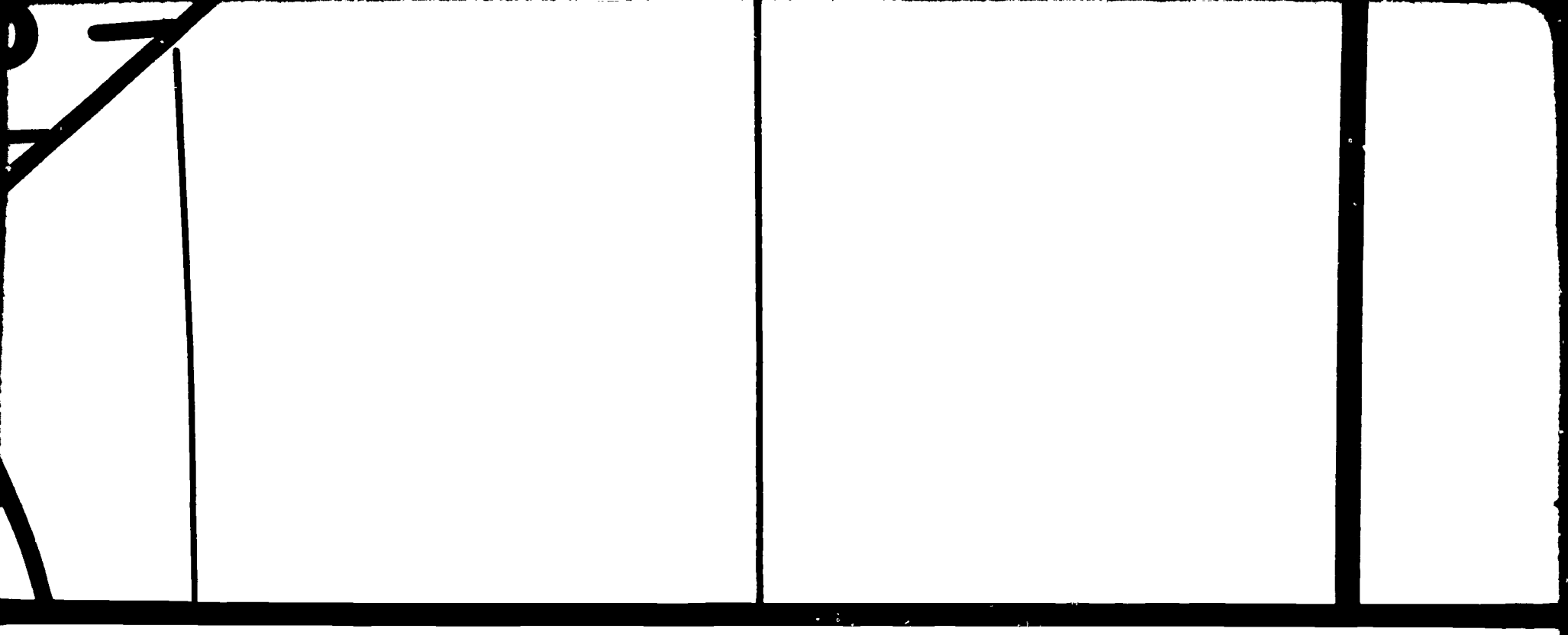

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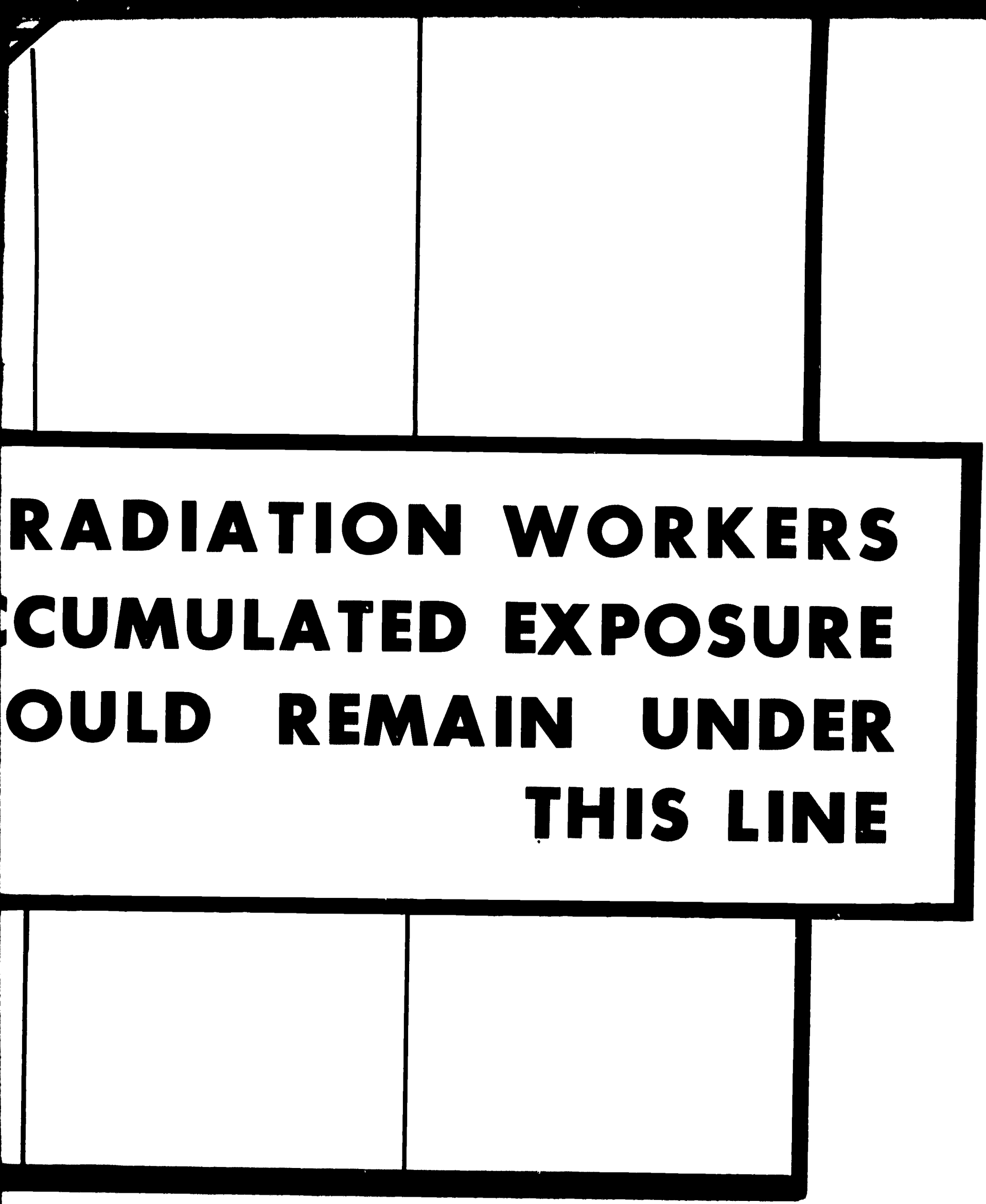

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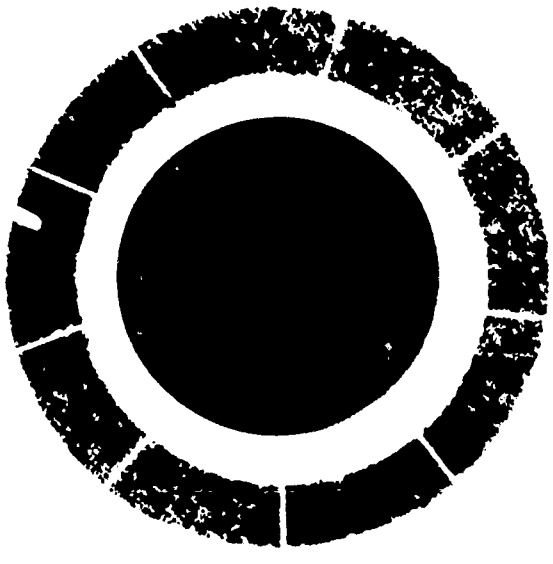

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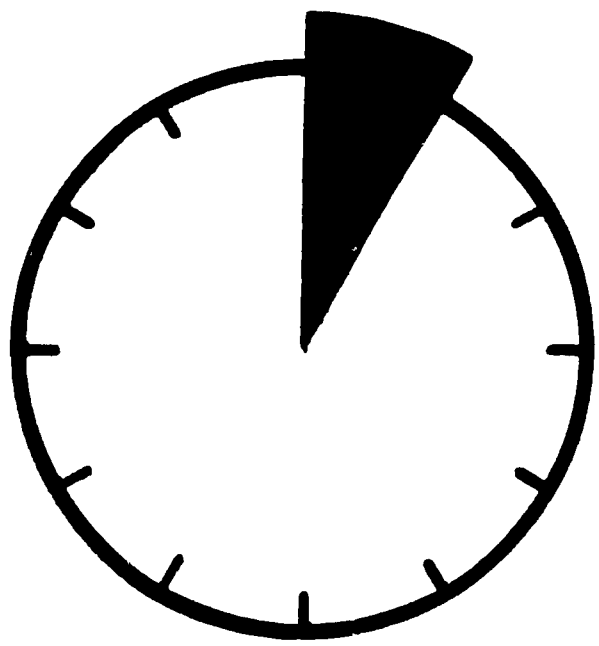

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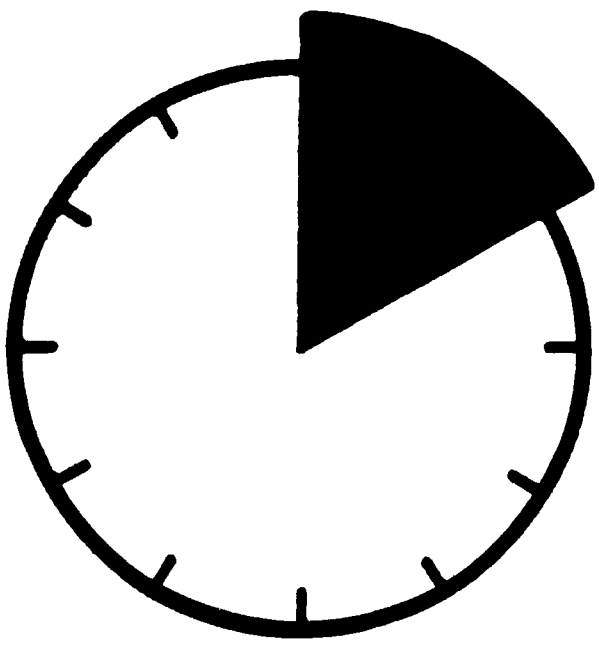

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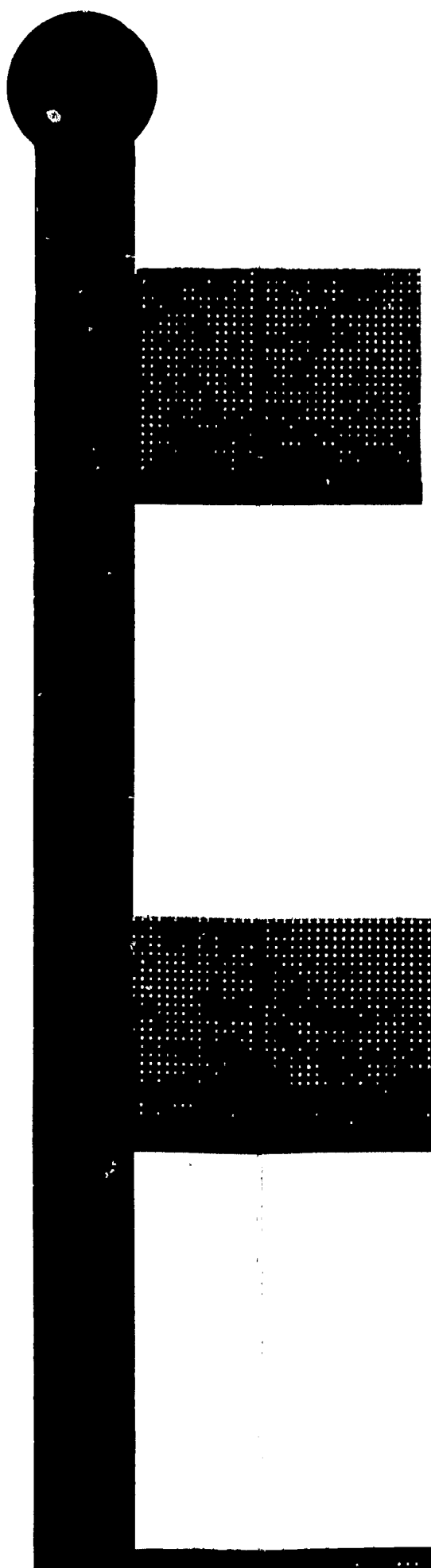

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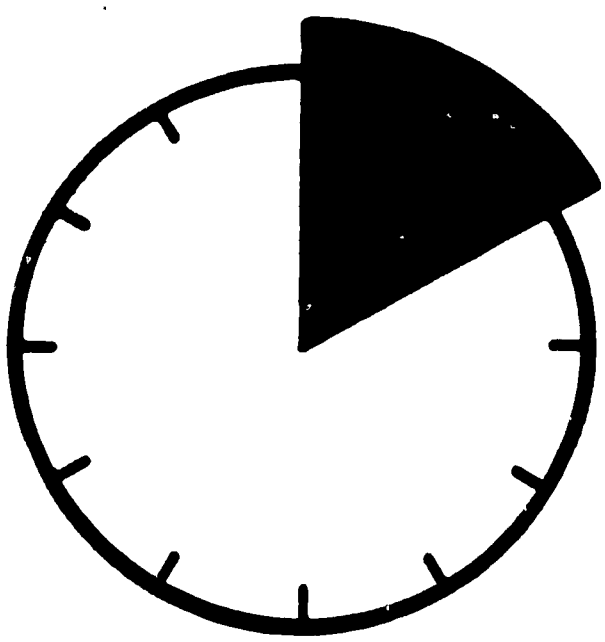
TIME AS A PROTECTION AGAINST EXTERNAL RADIATION



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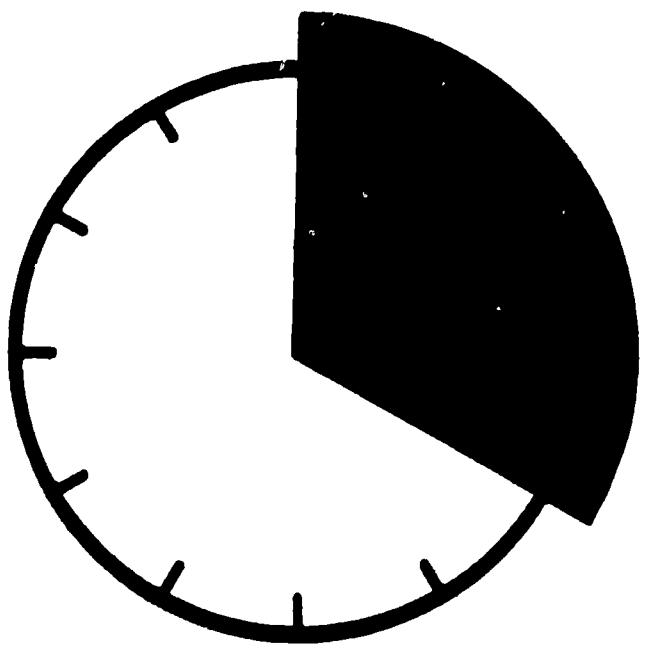

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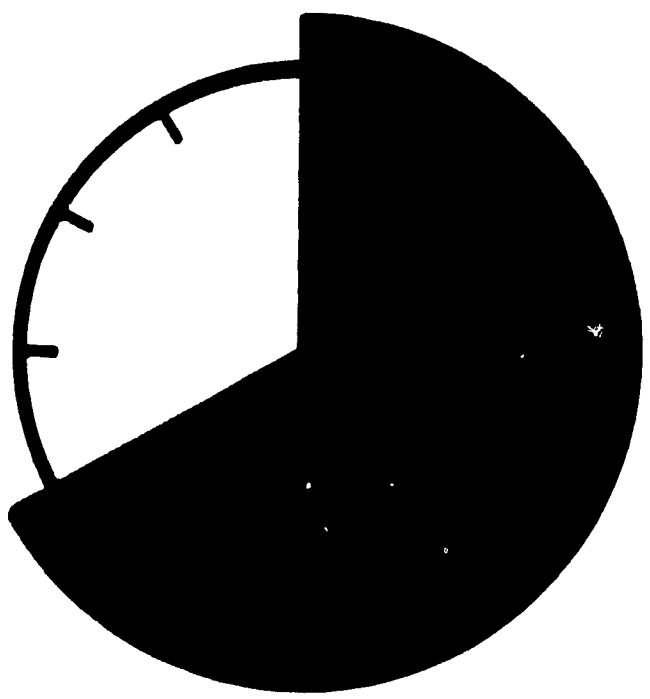

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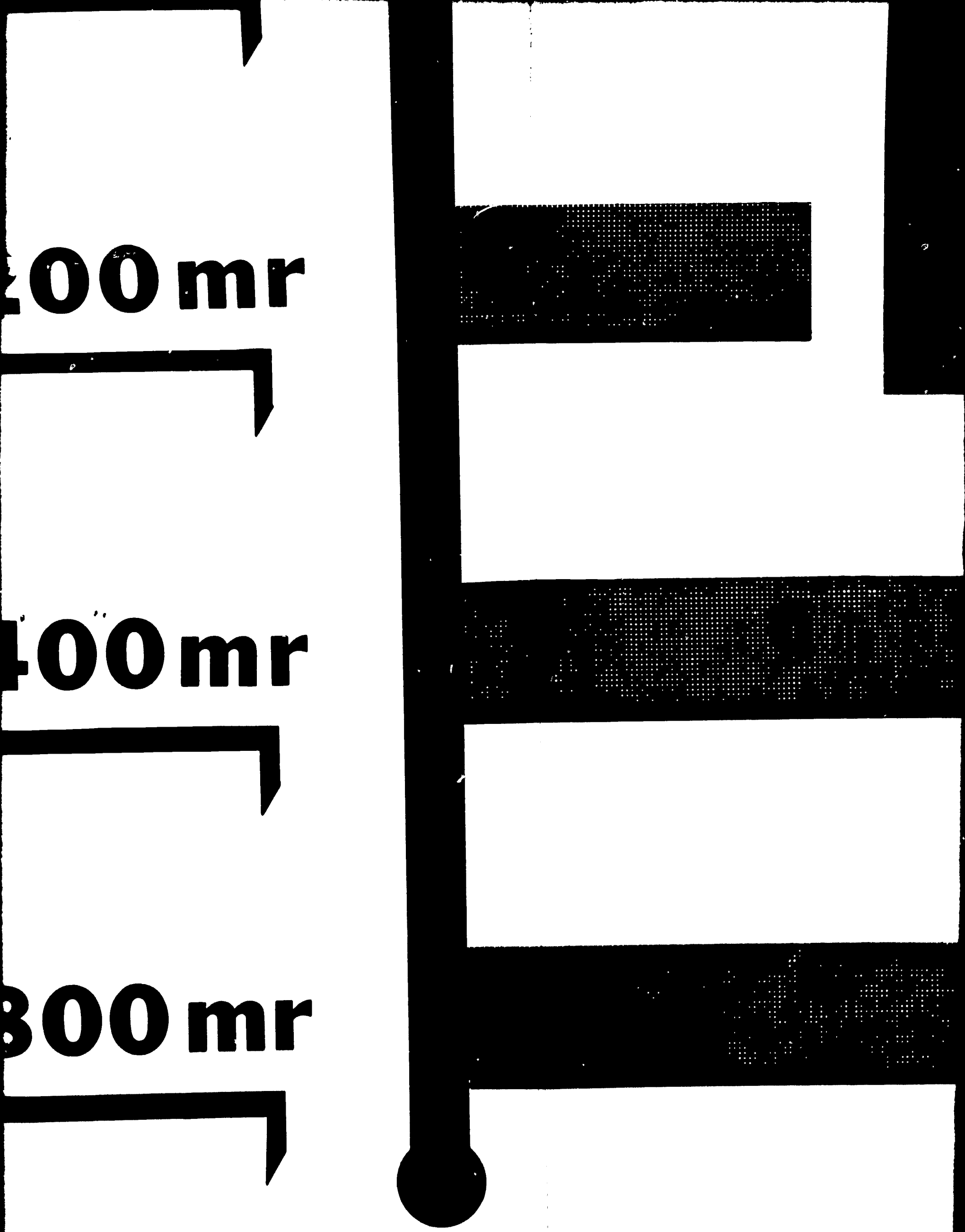

Peacetime Radiation Hazar

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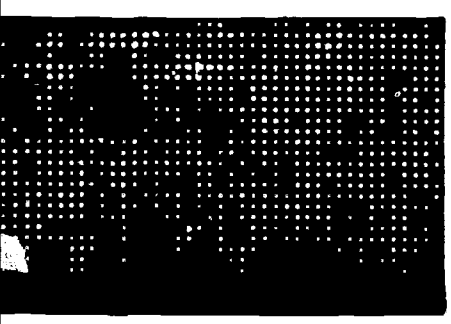

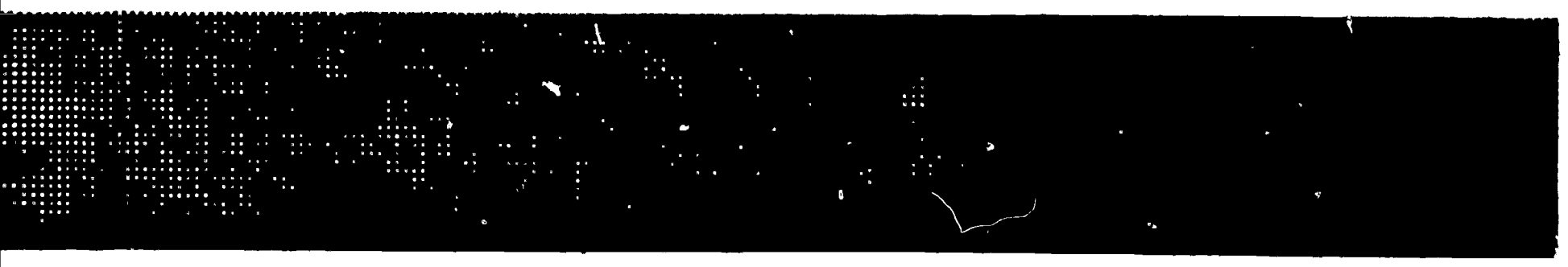

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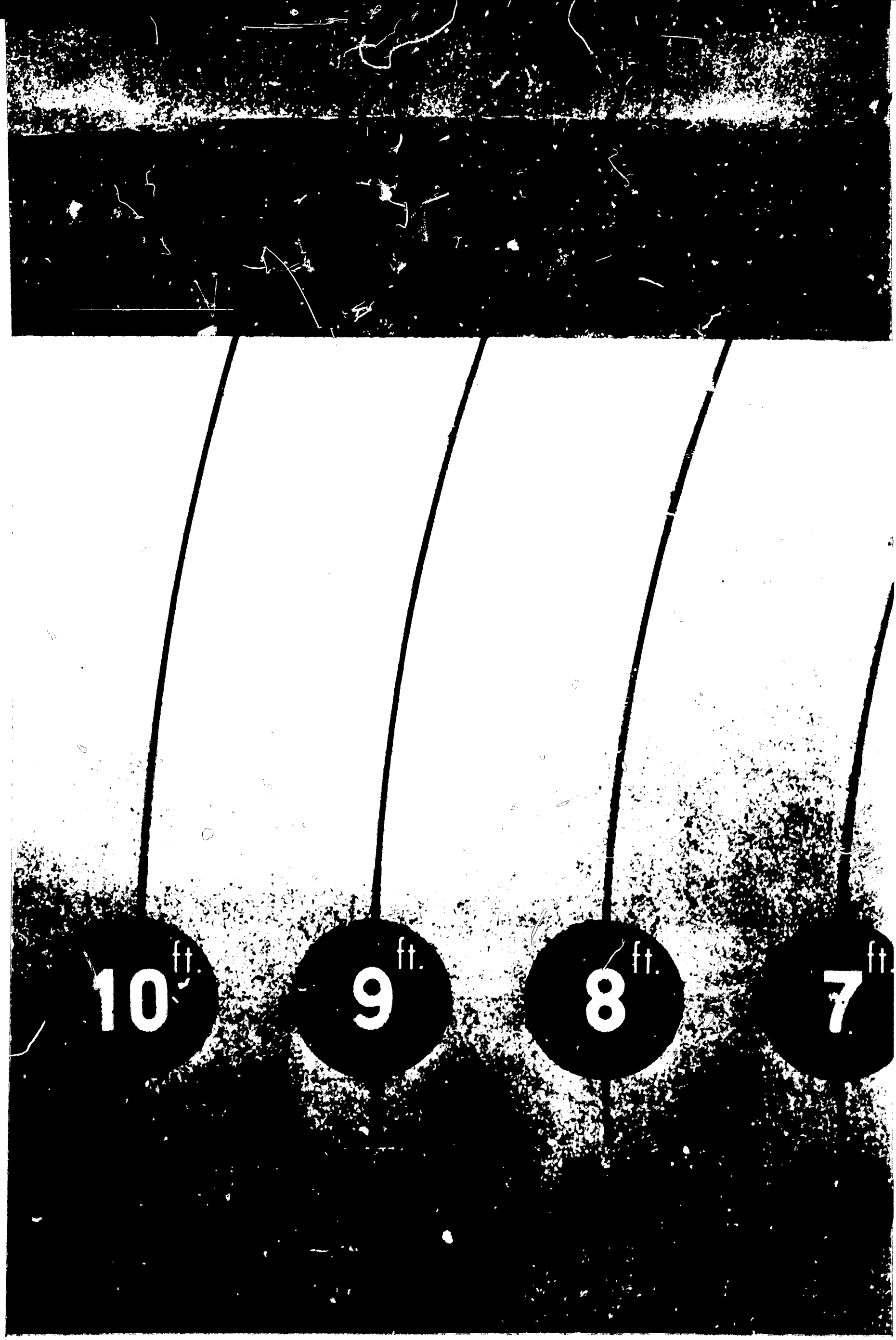
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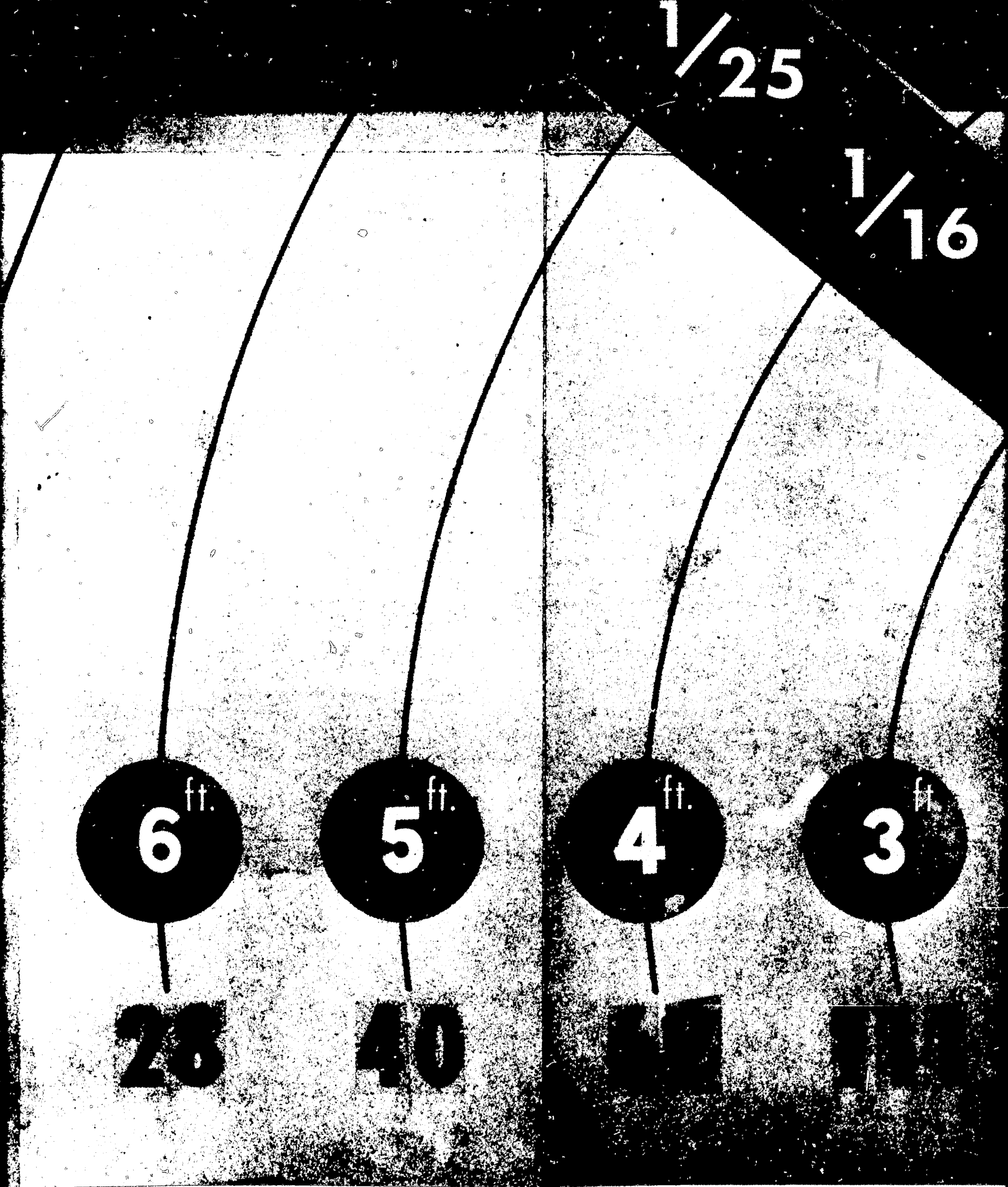
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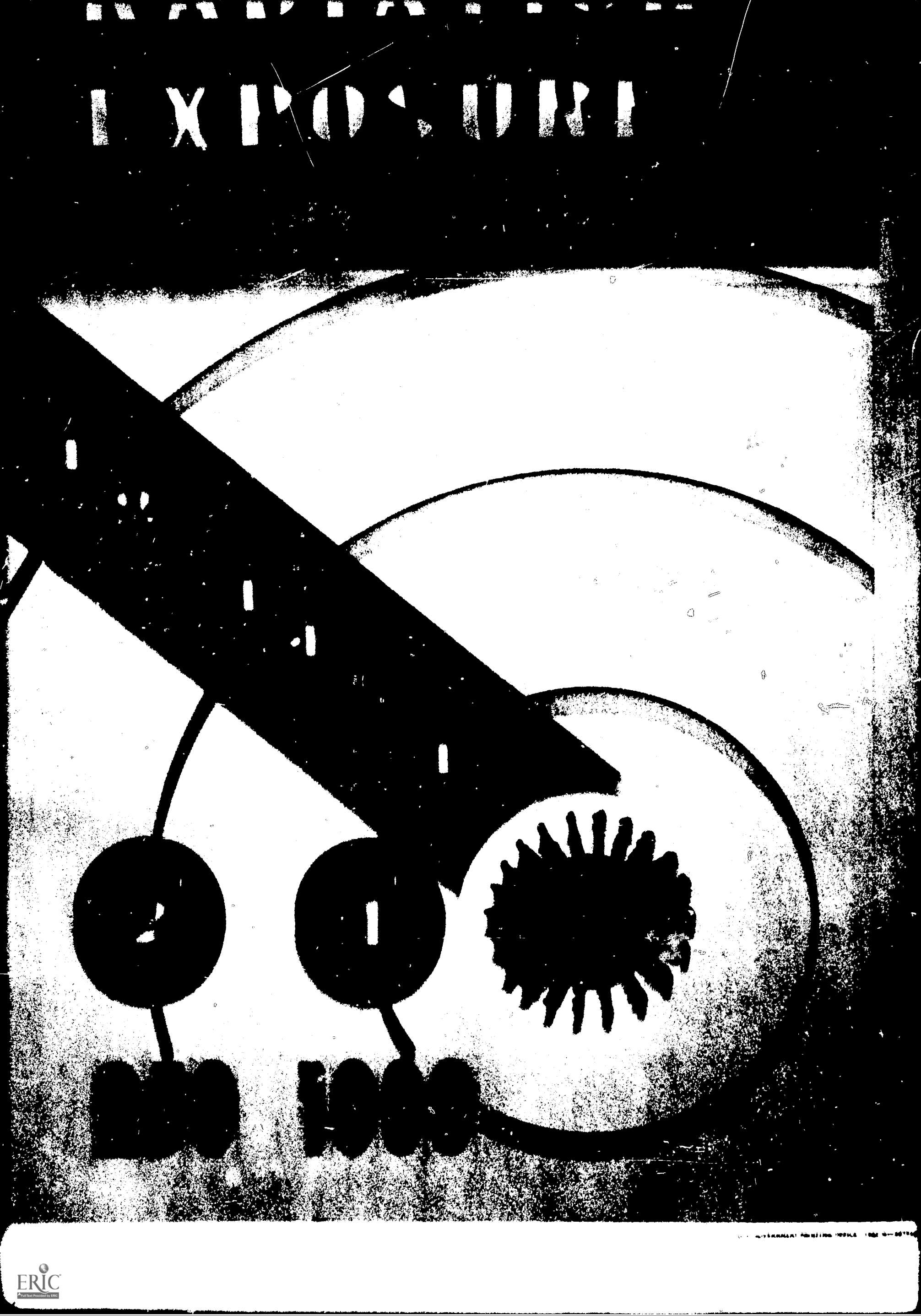

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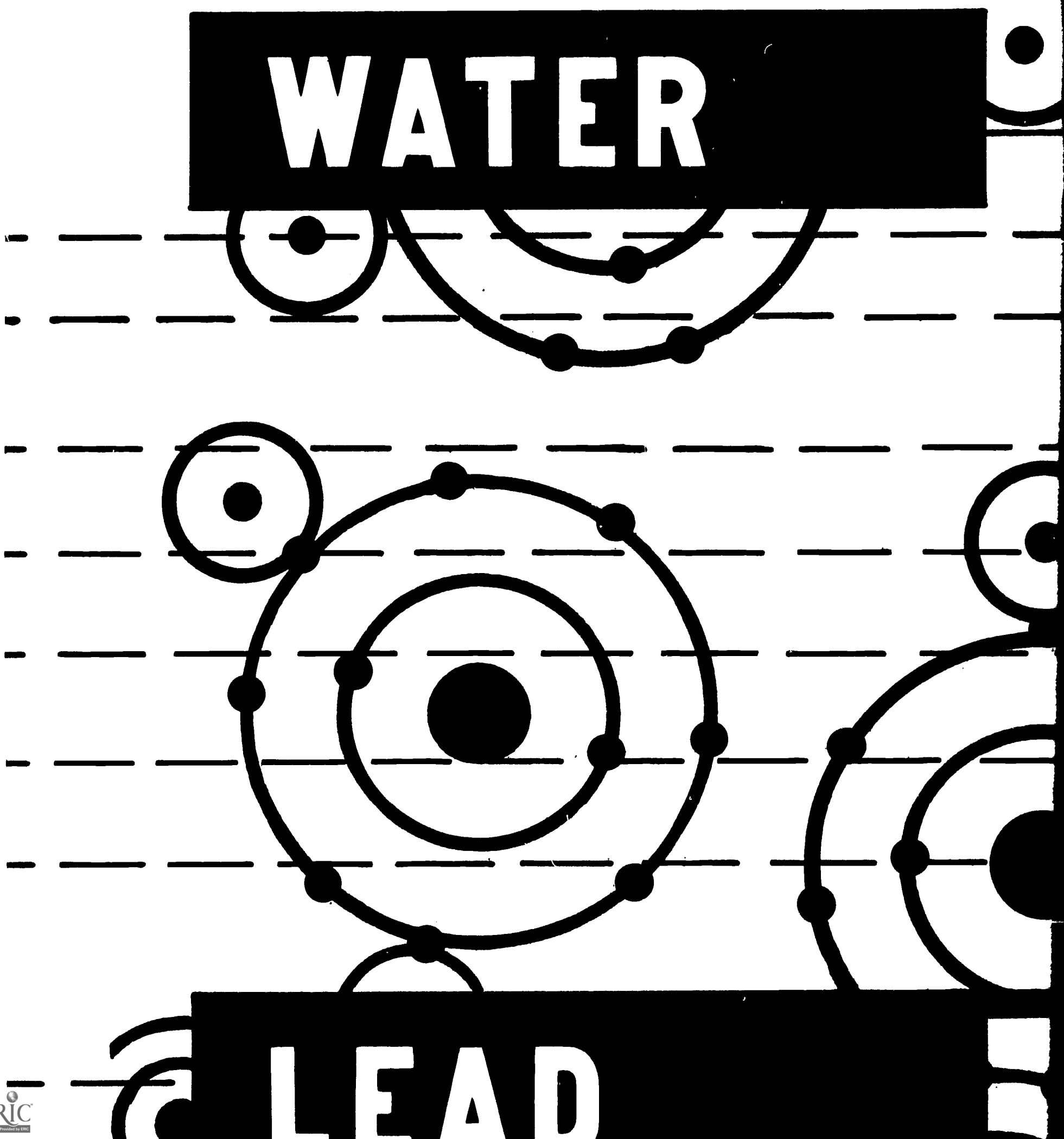

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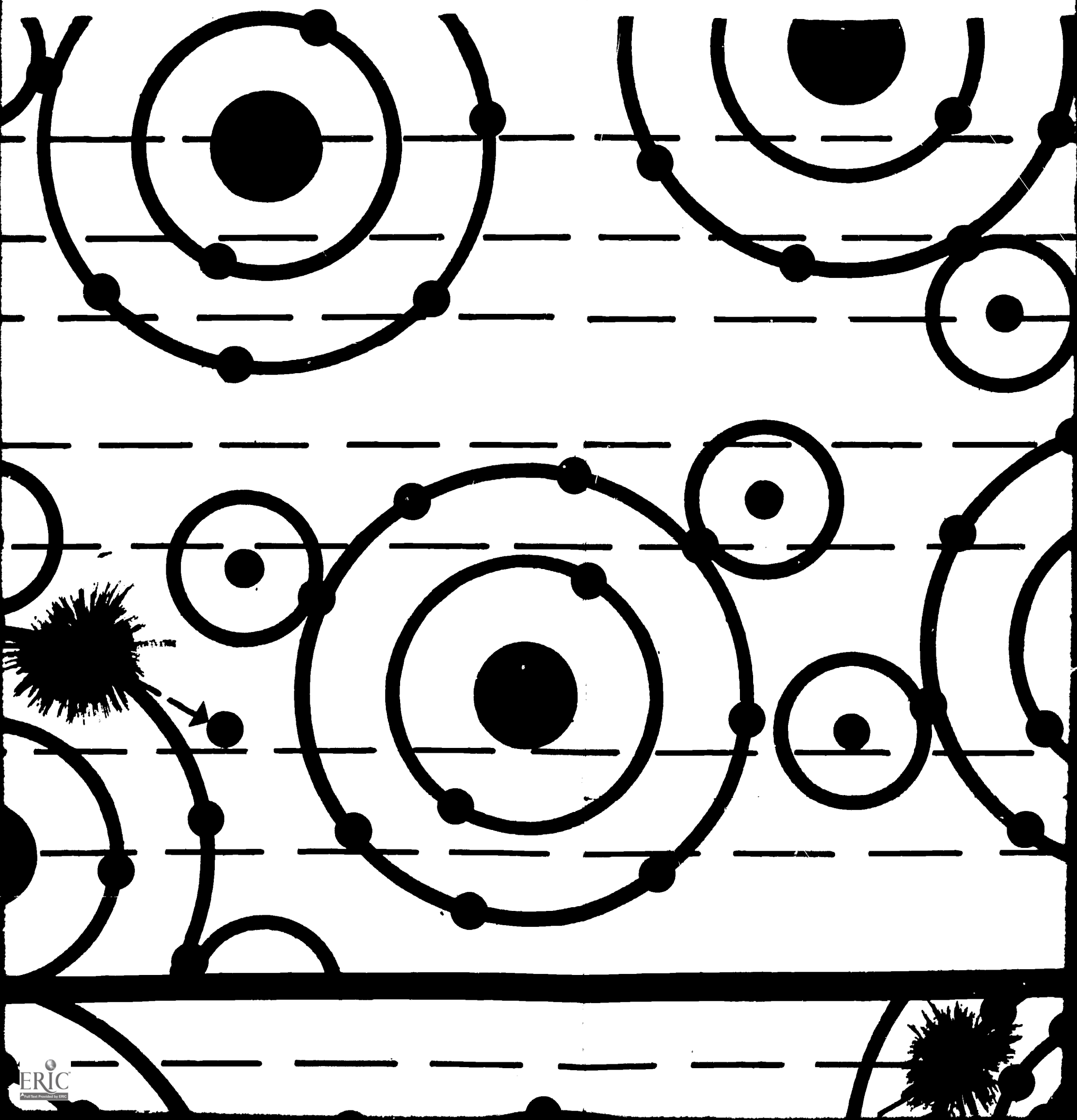

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STRUCTURE

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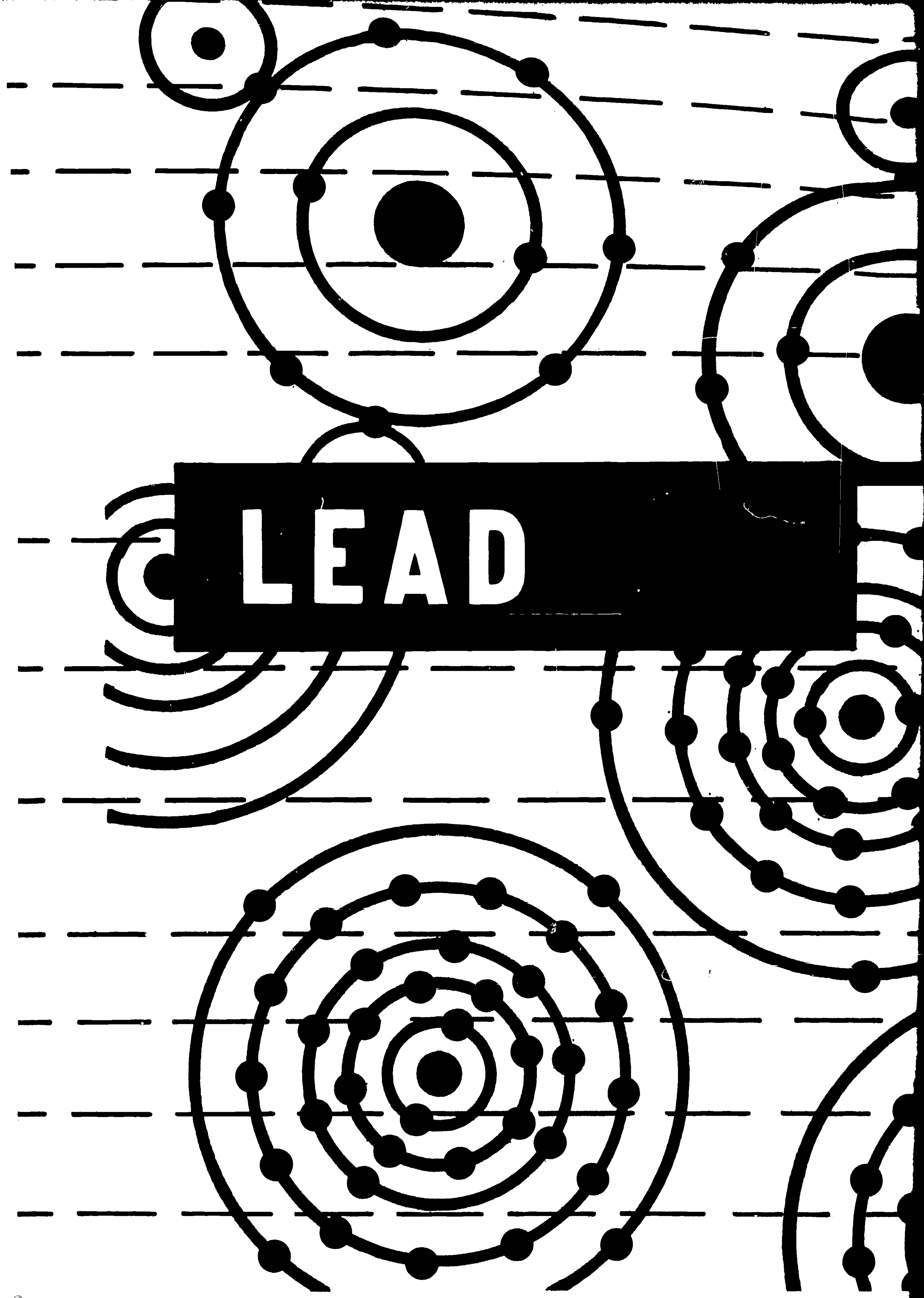
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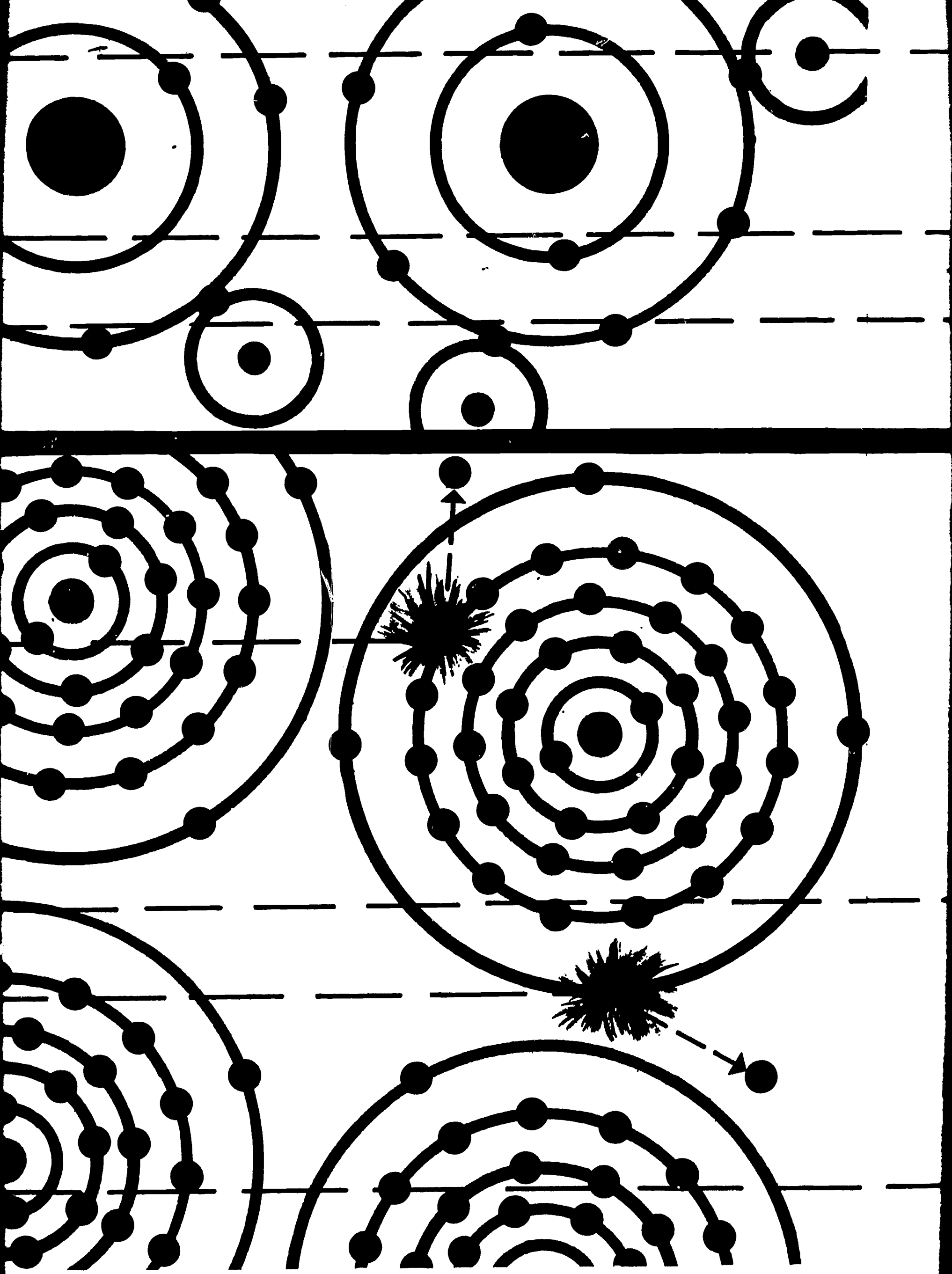

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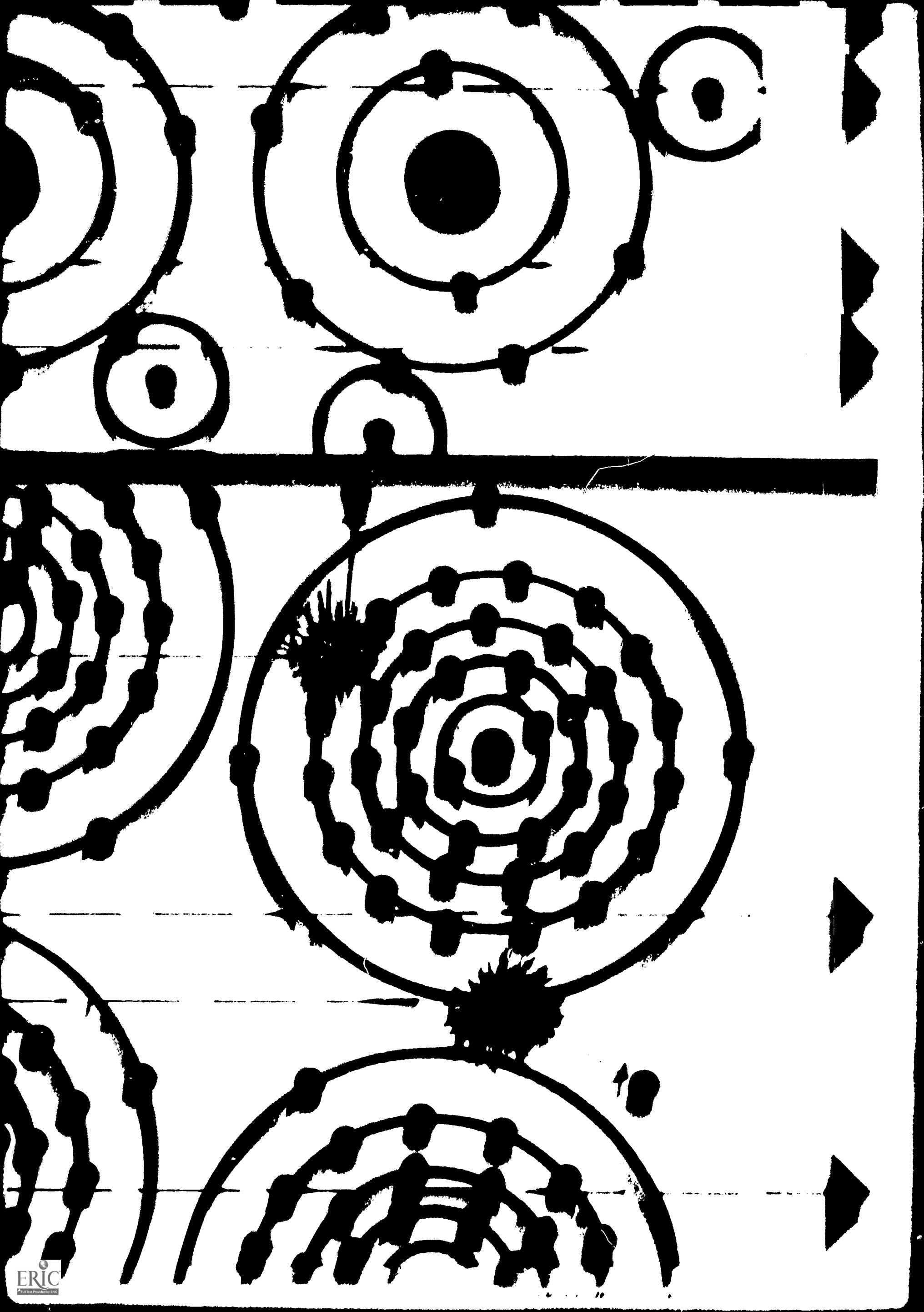

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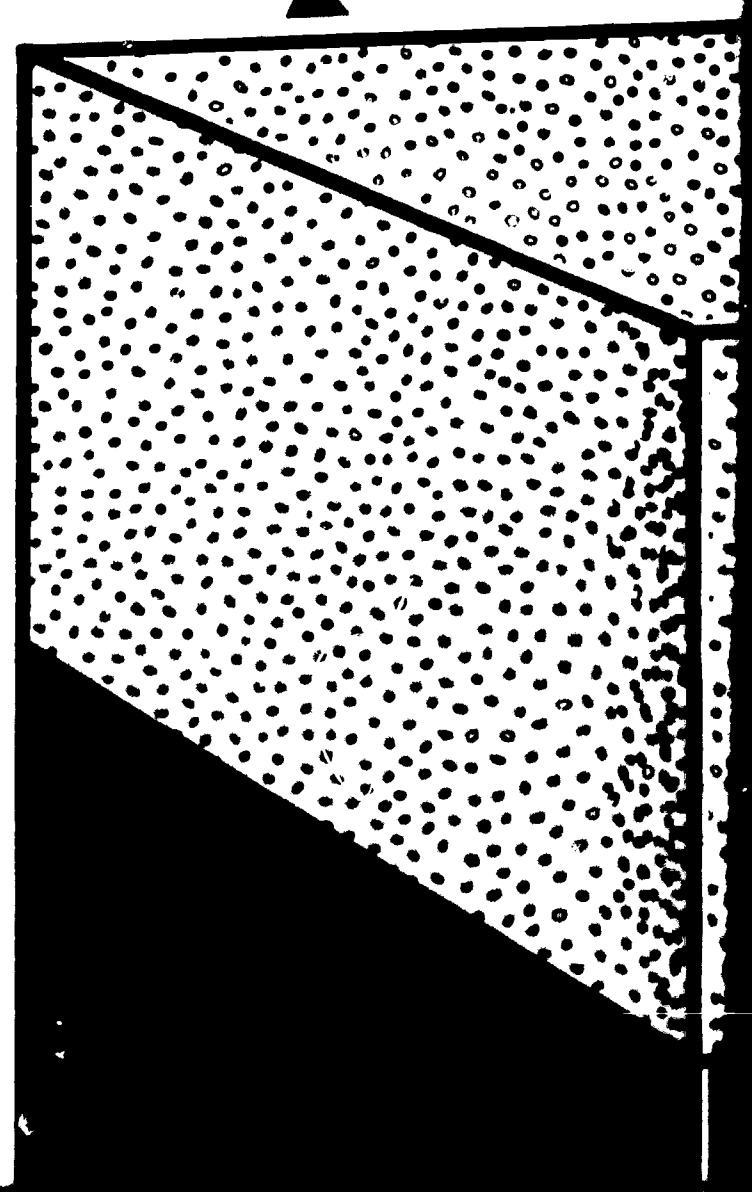

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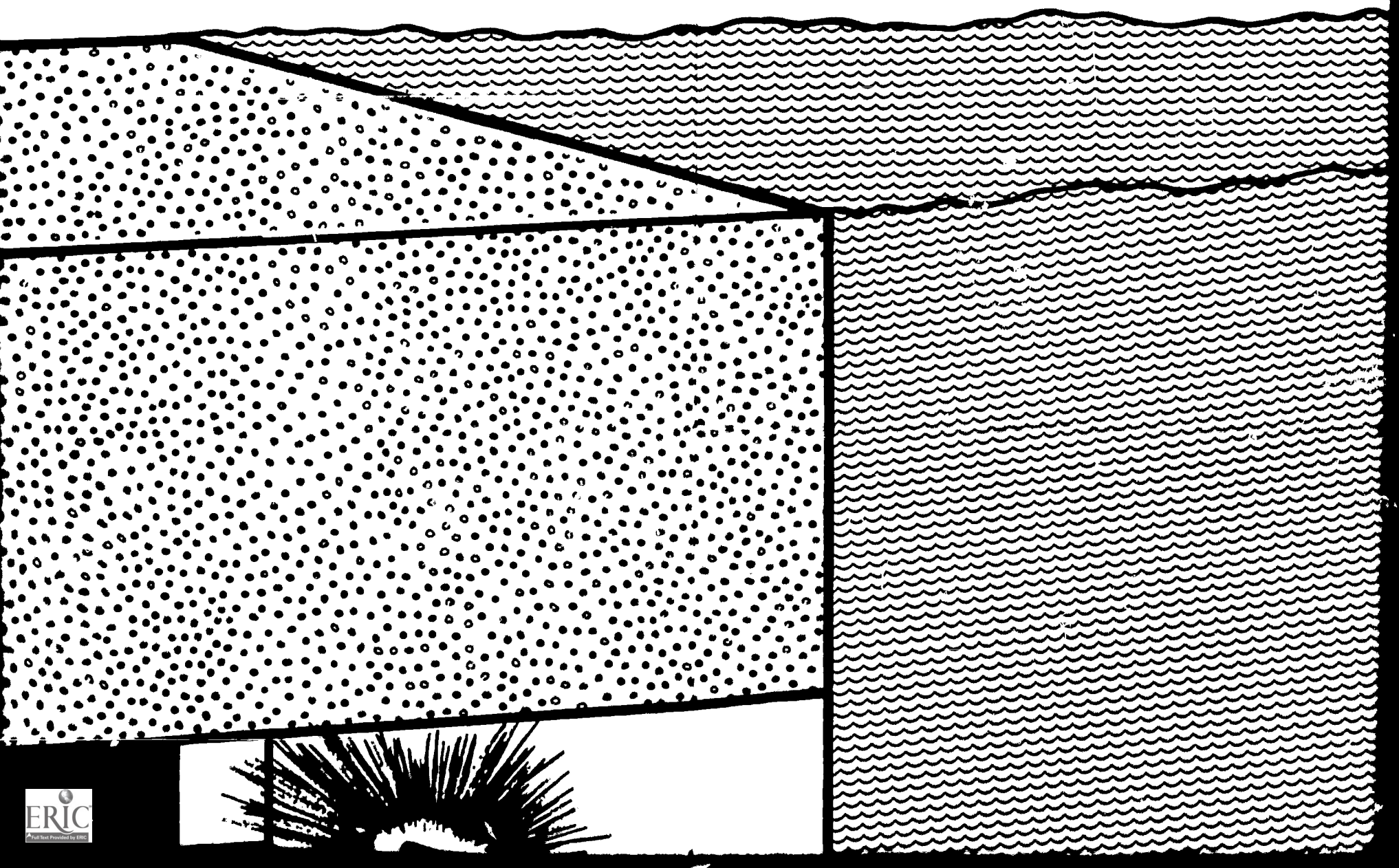

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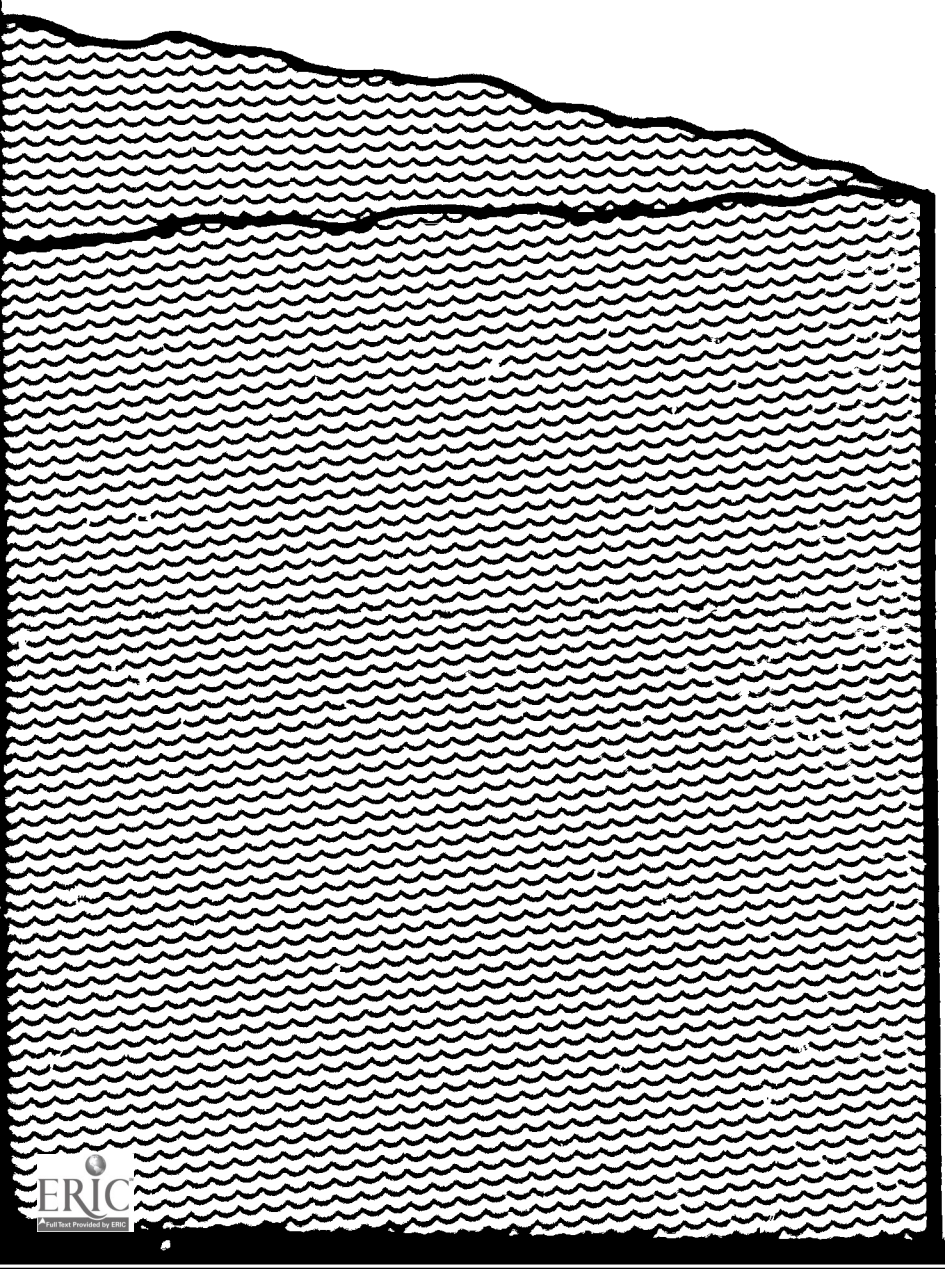
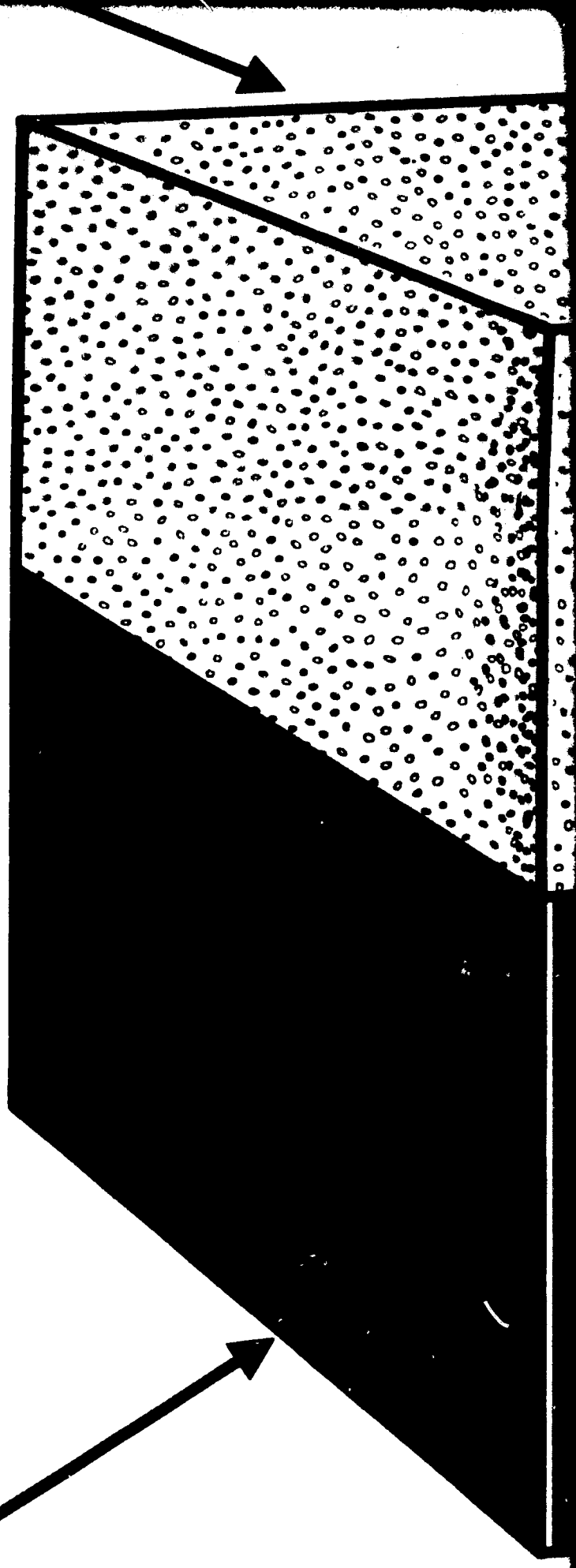
FOR SHIELDING RADIATION





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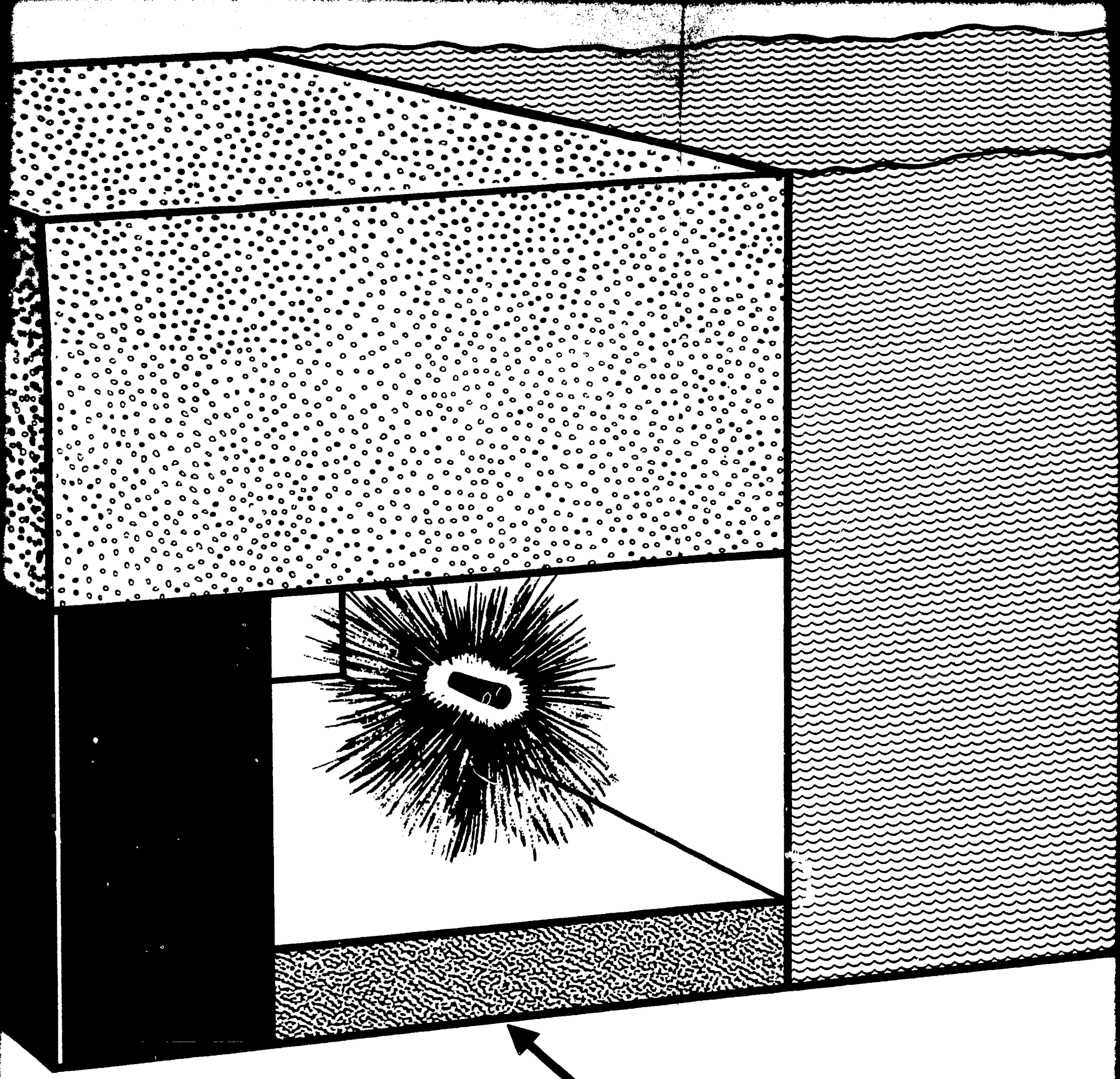

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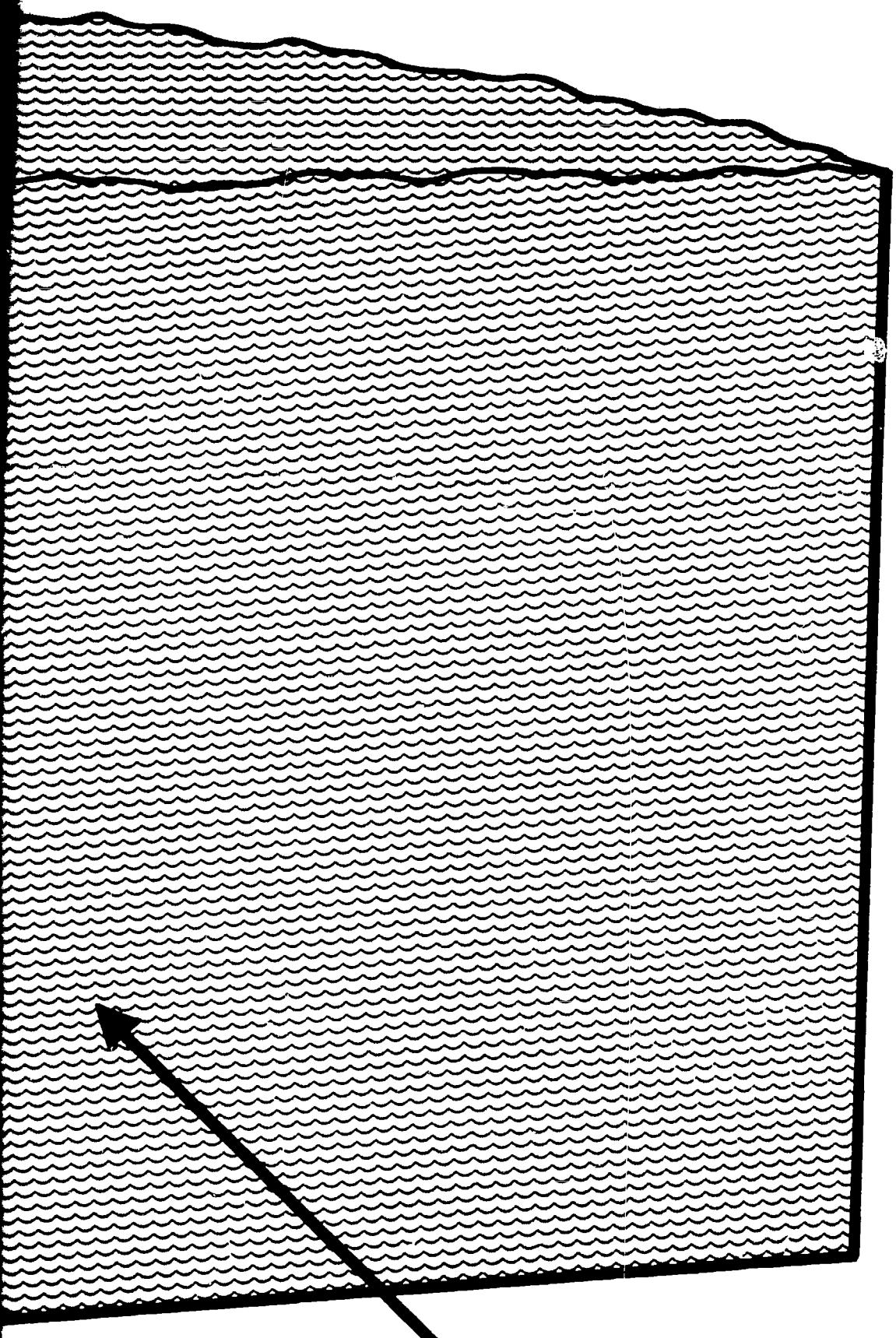

WATER

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FIRE PROBLEM

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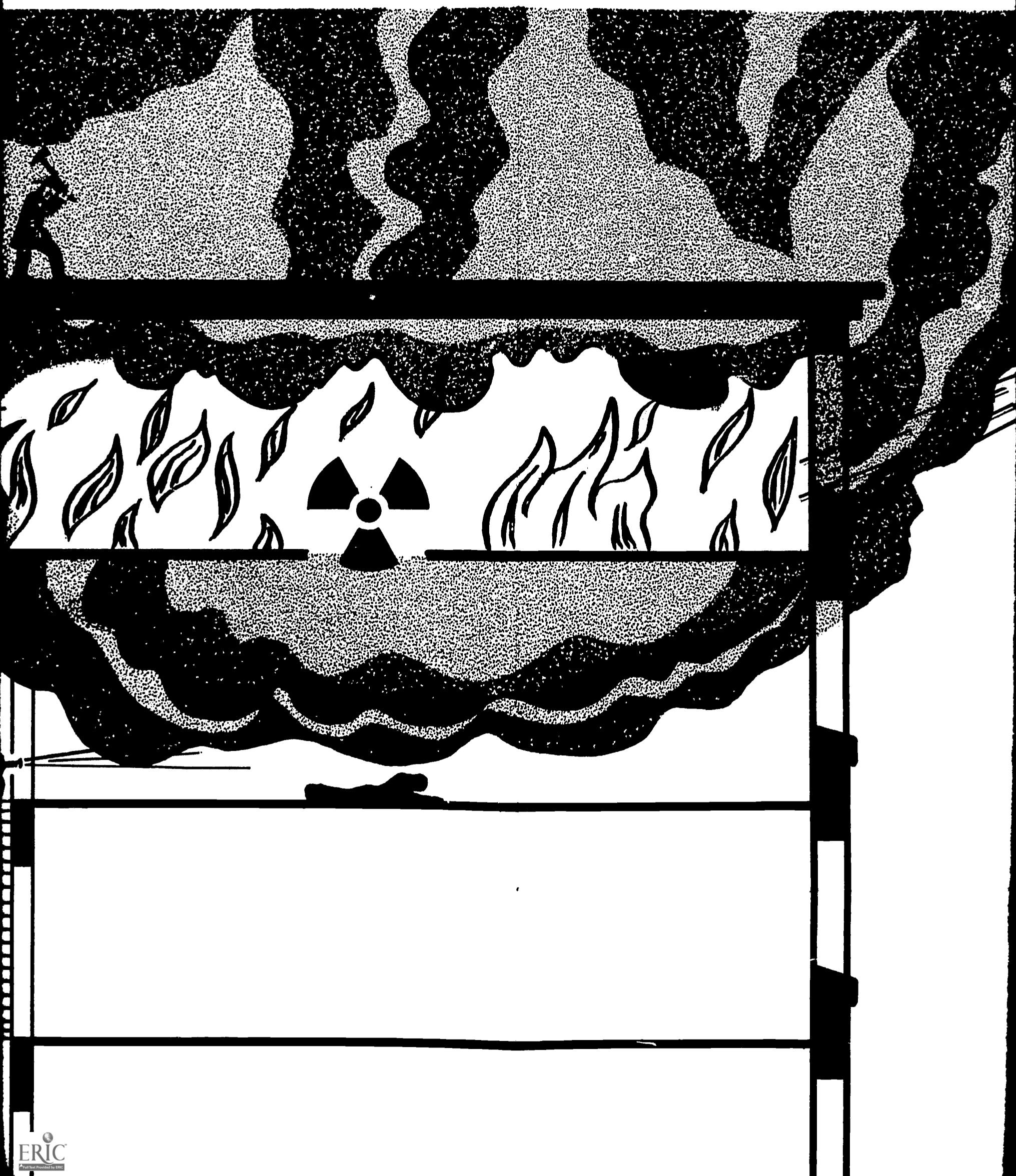

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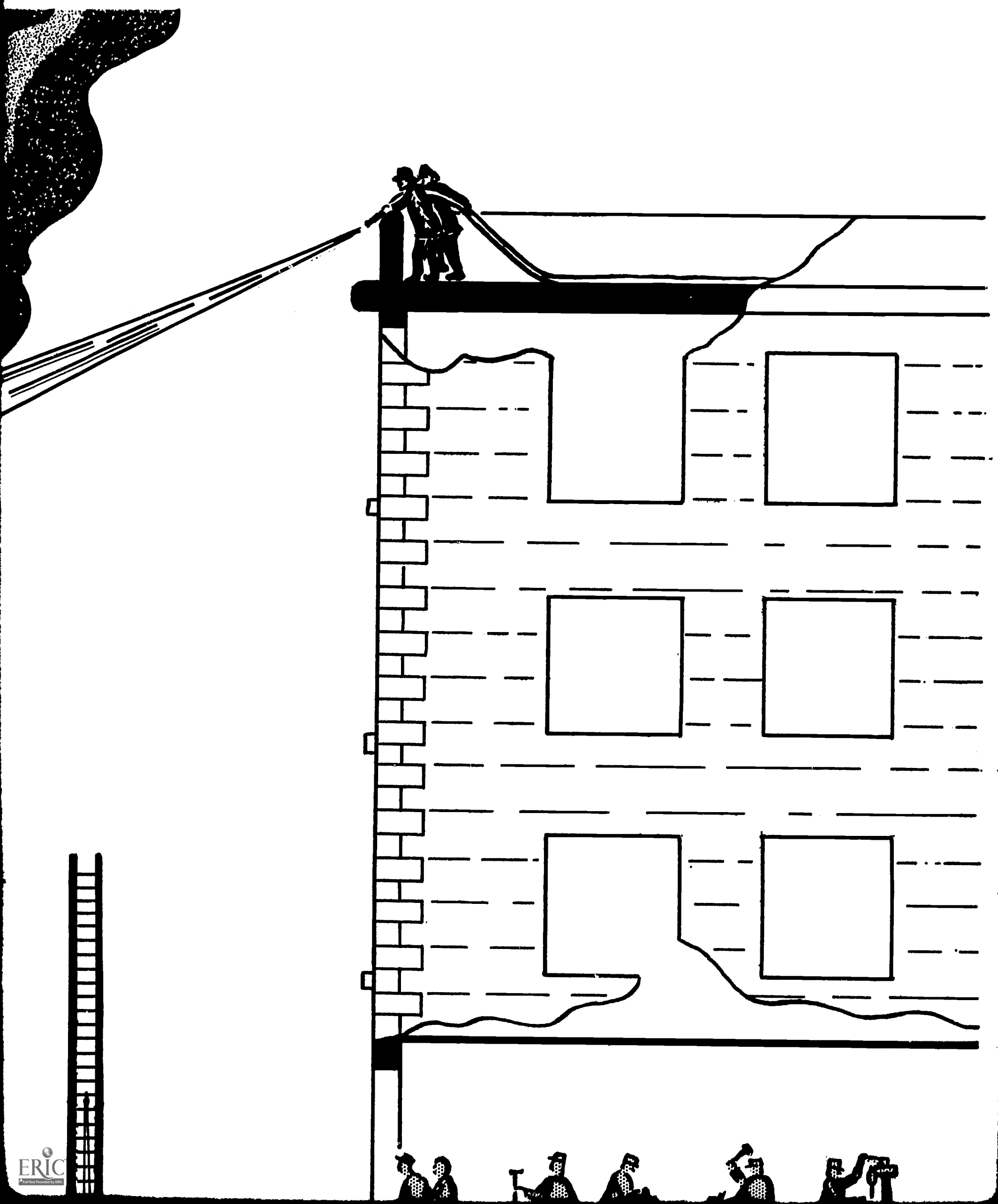

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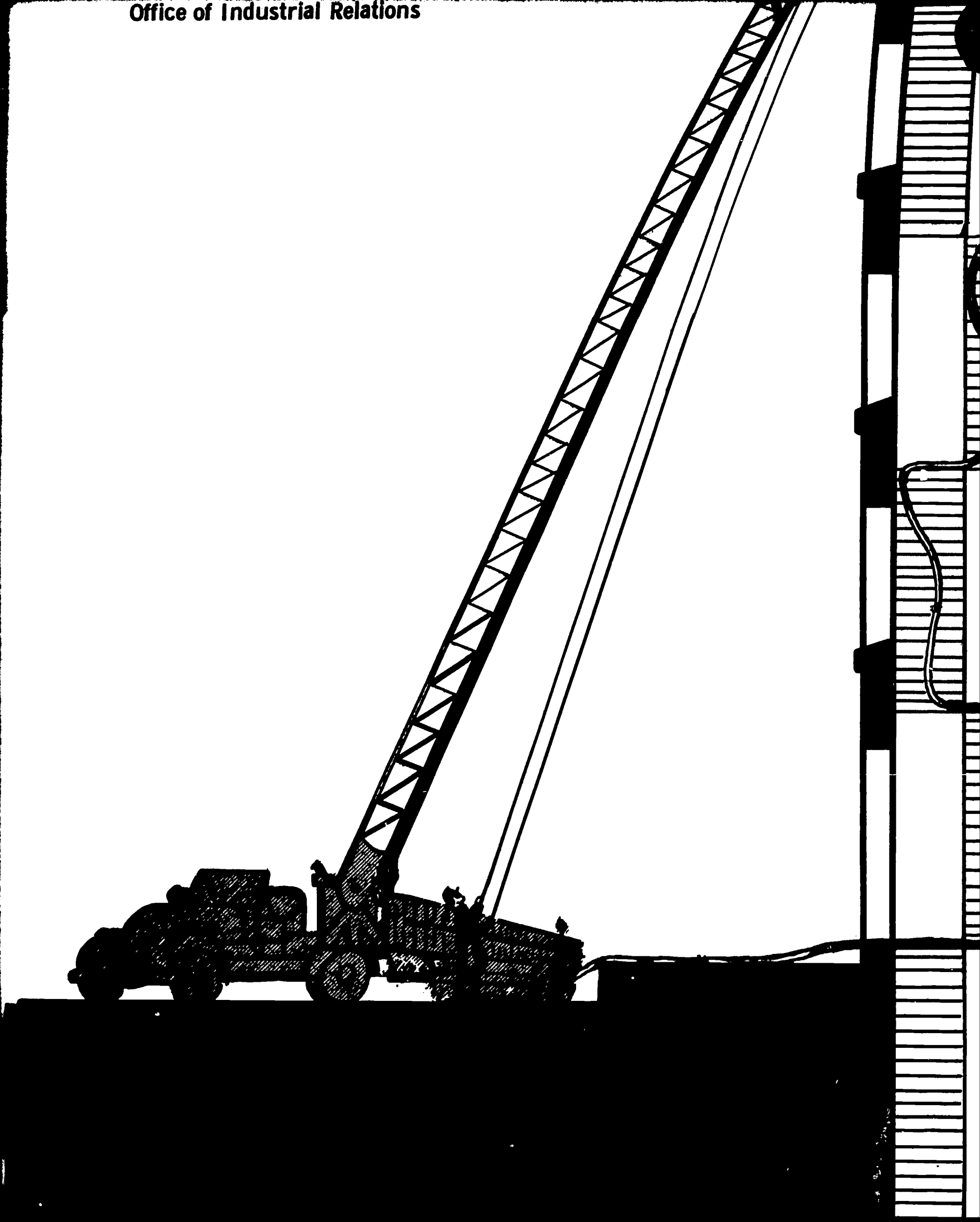

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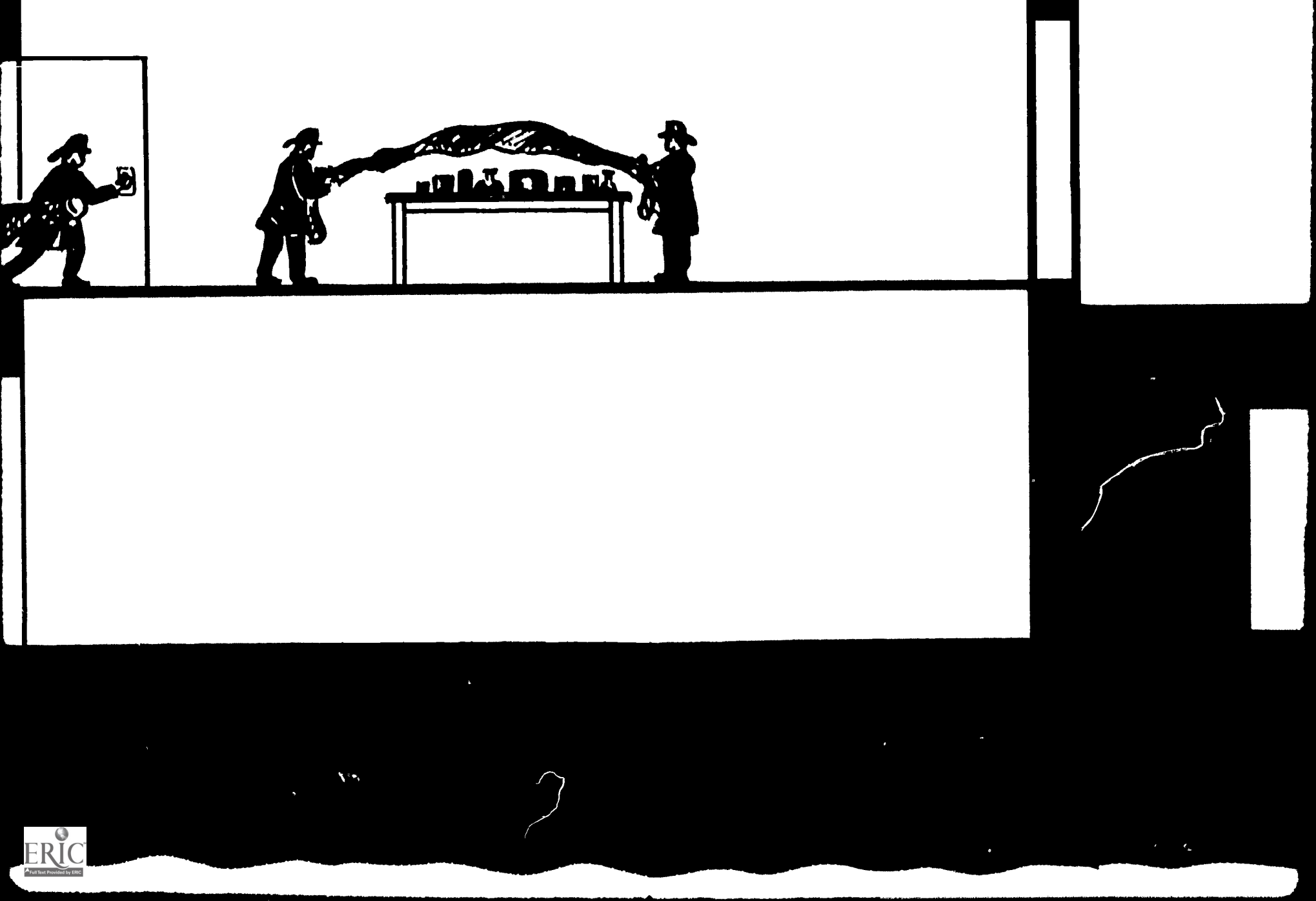

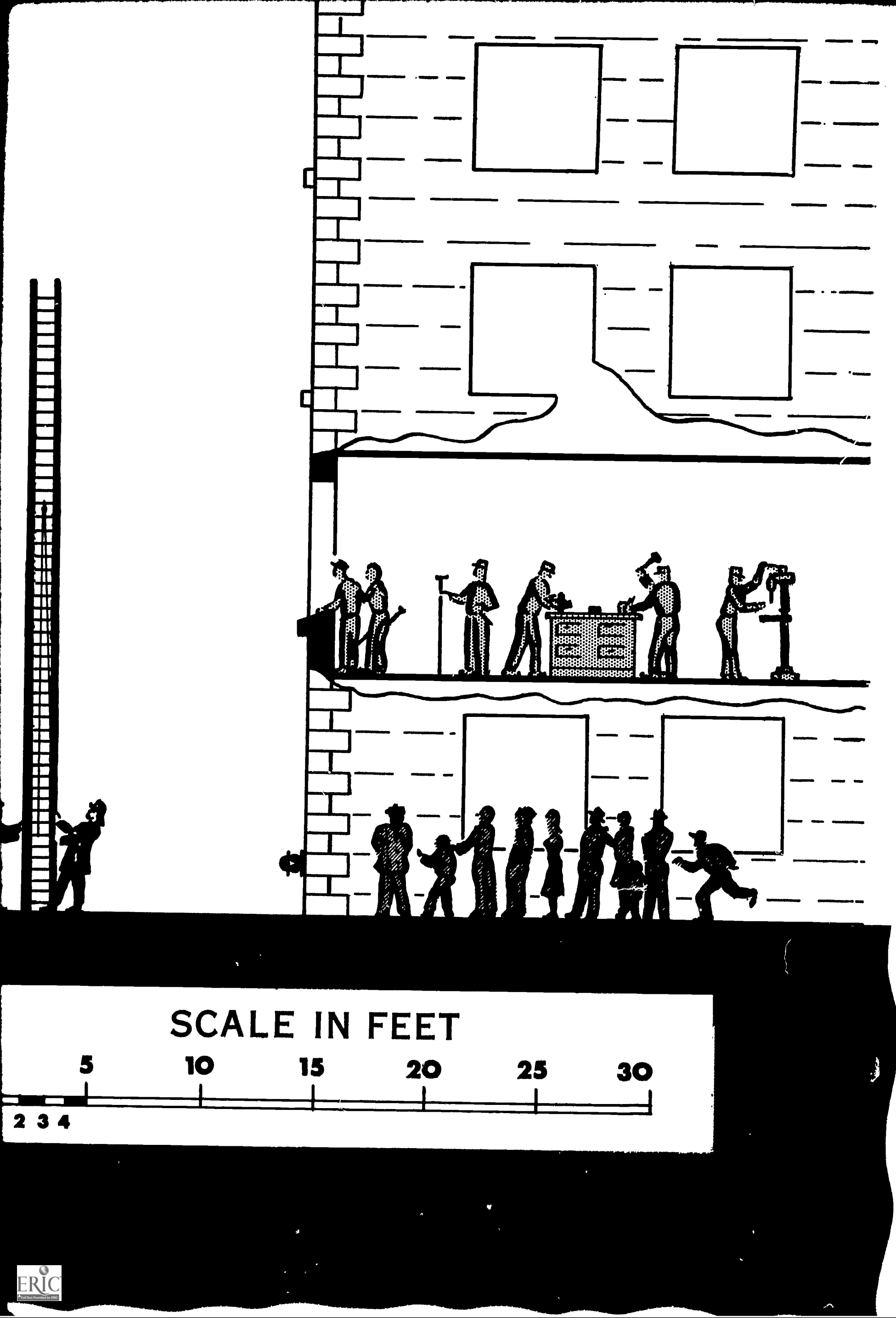
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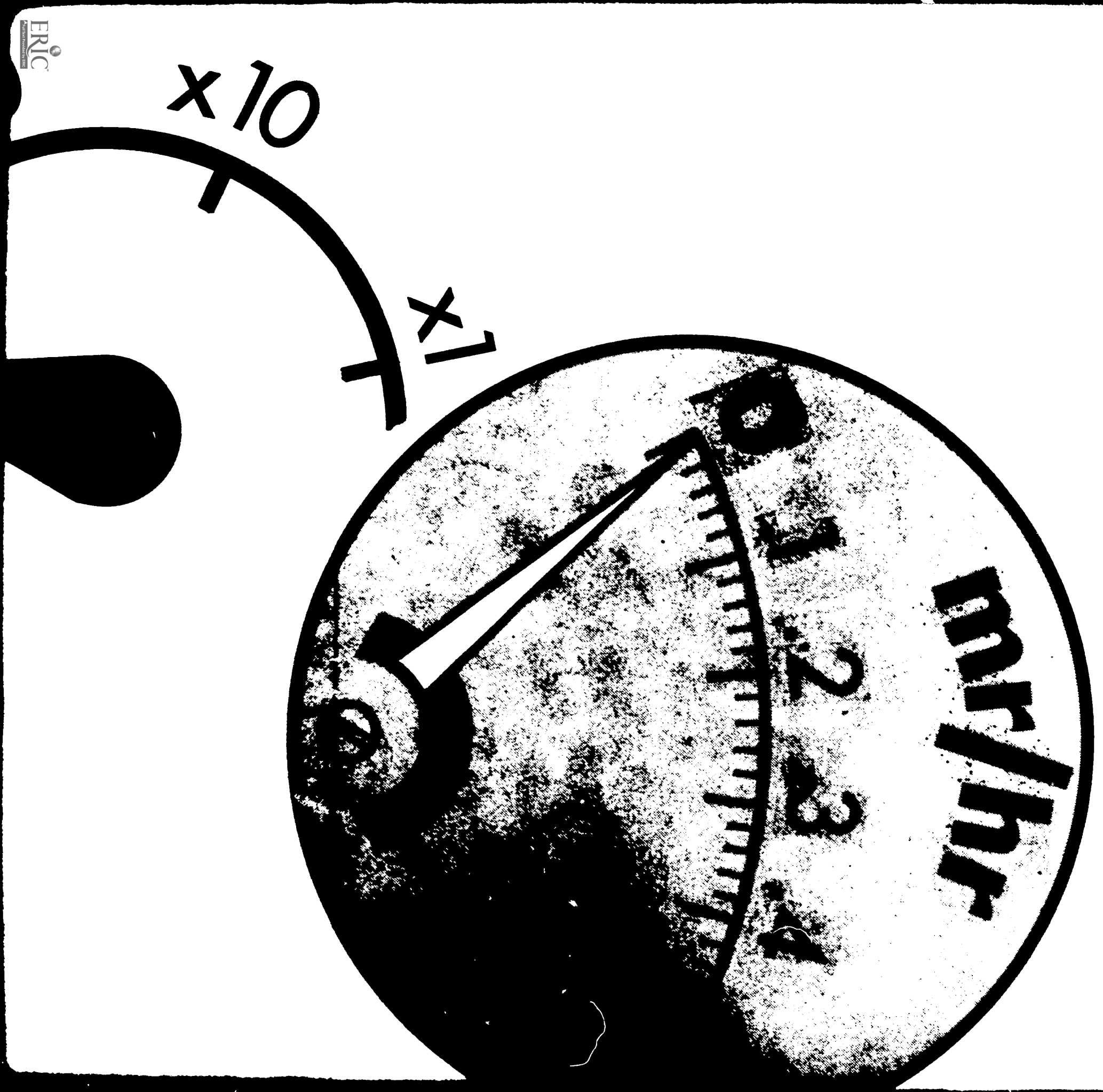
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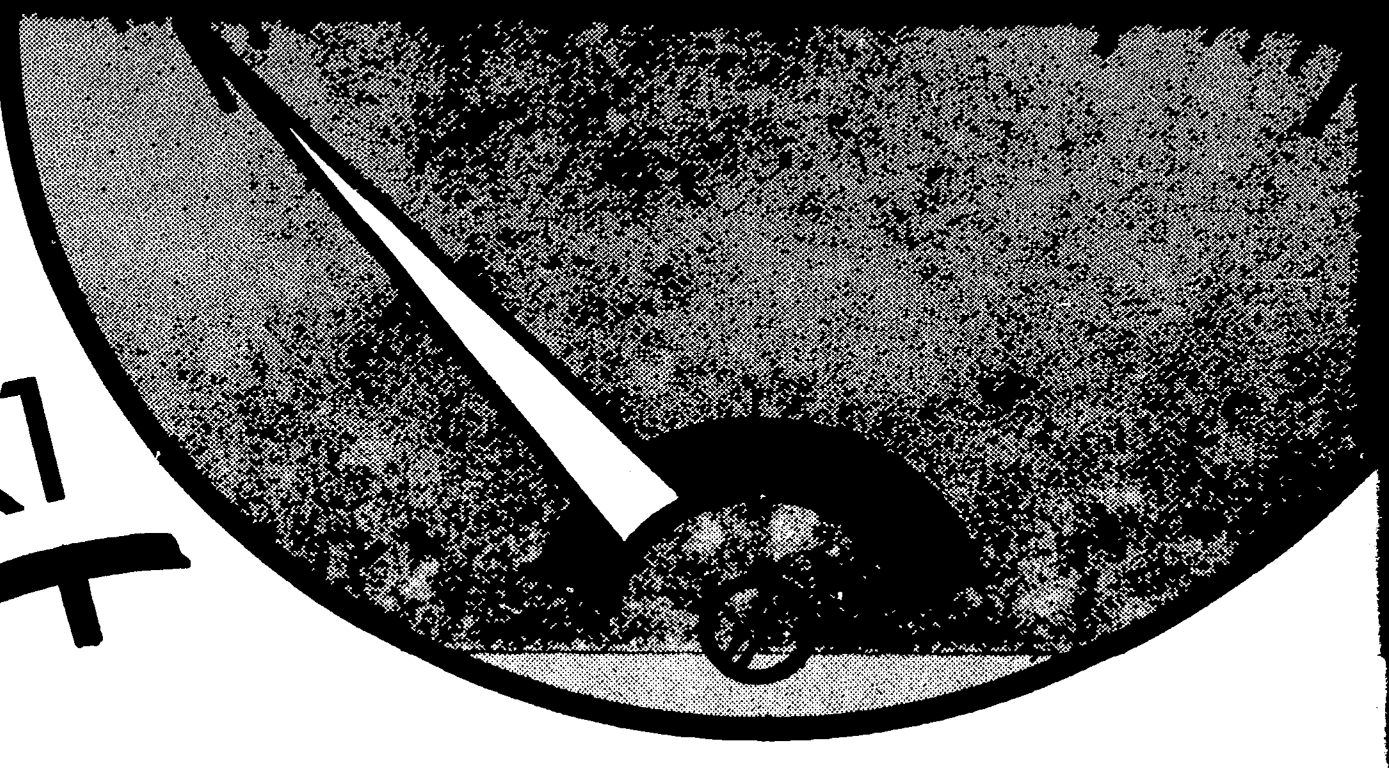

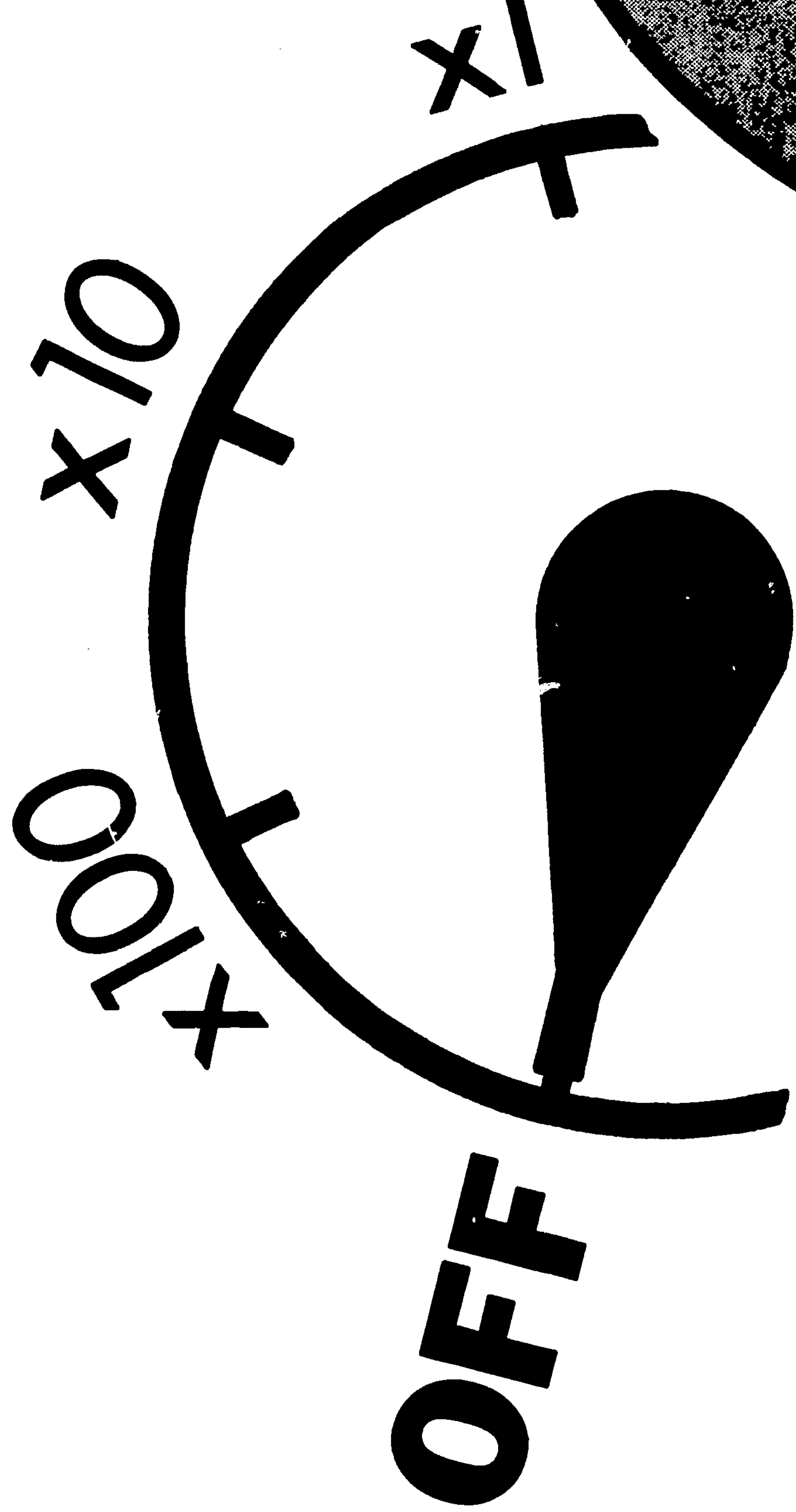

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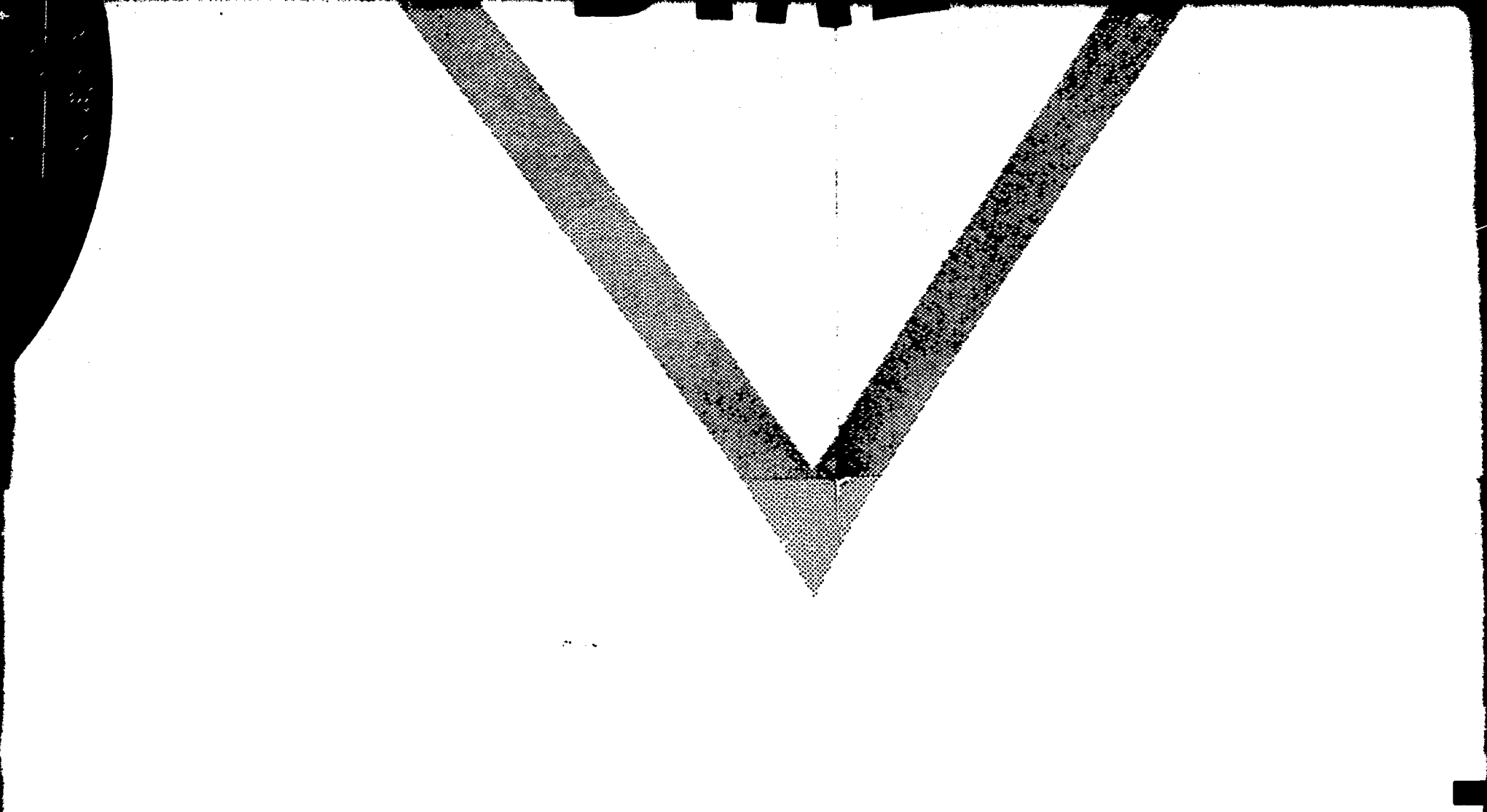

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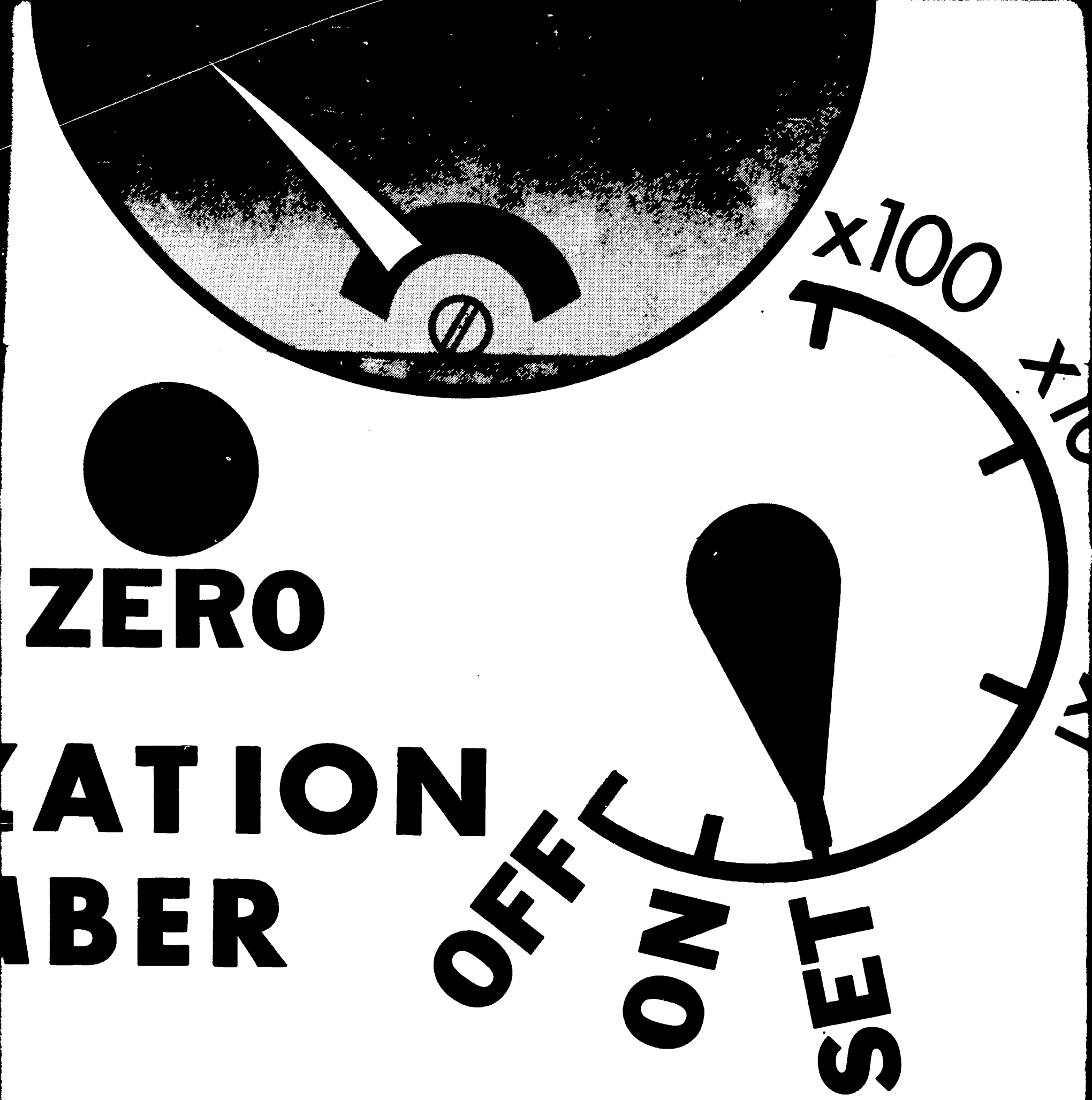

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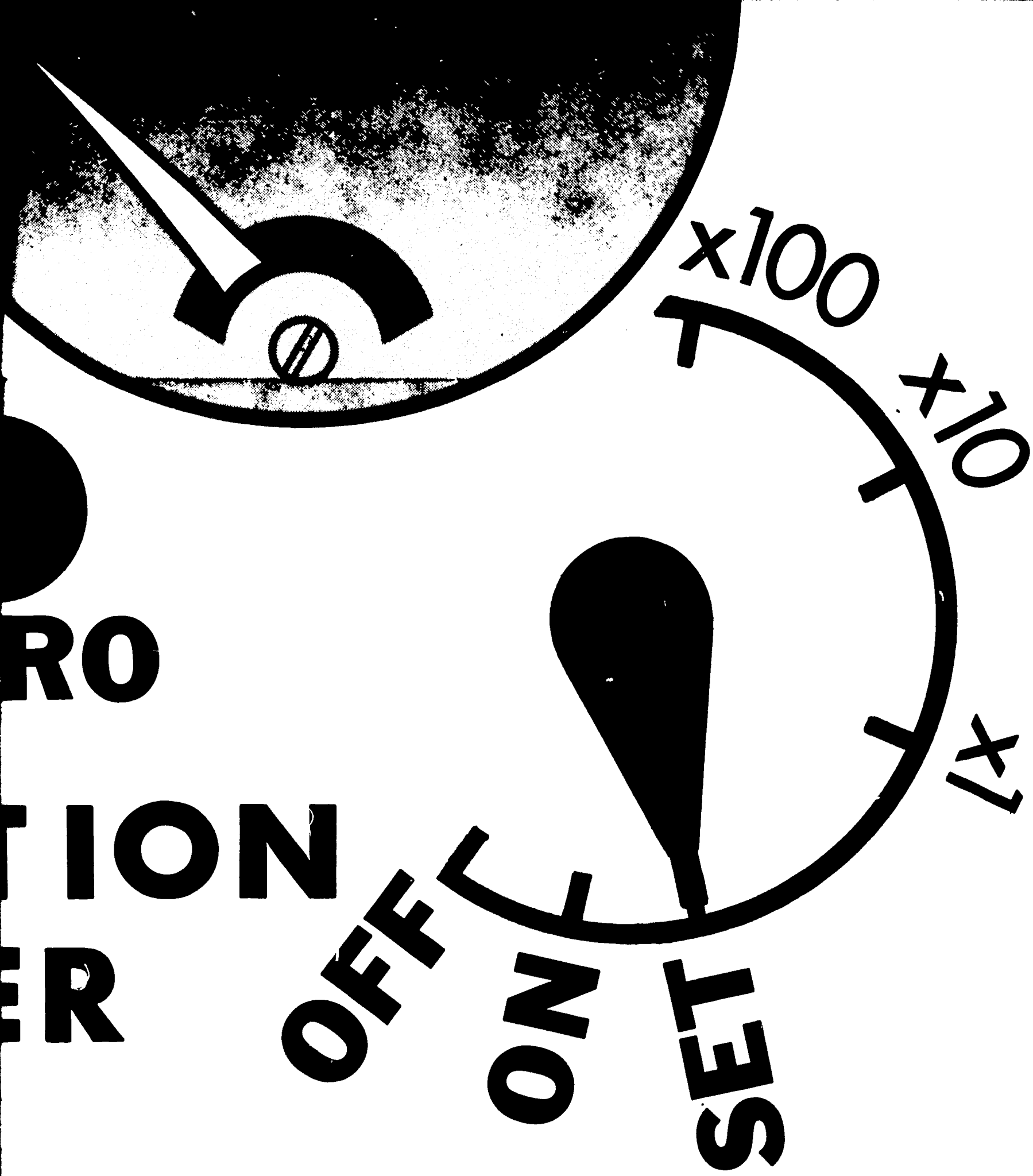

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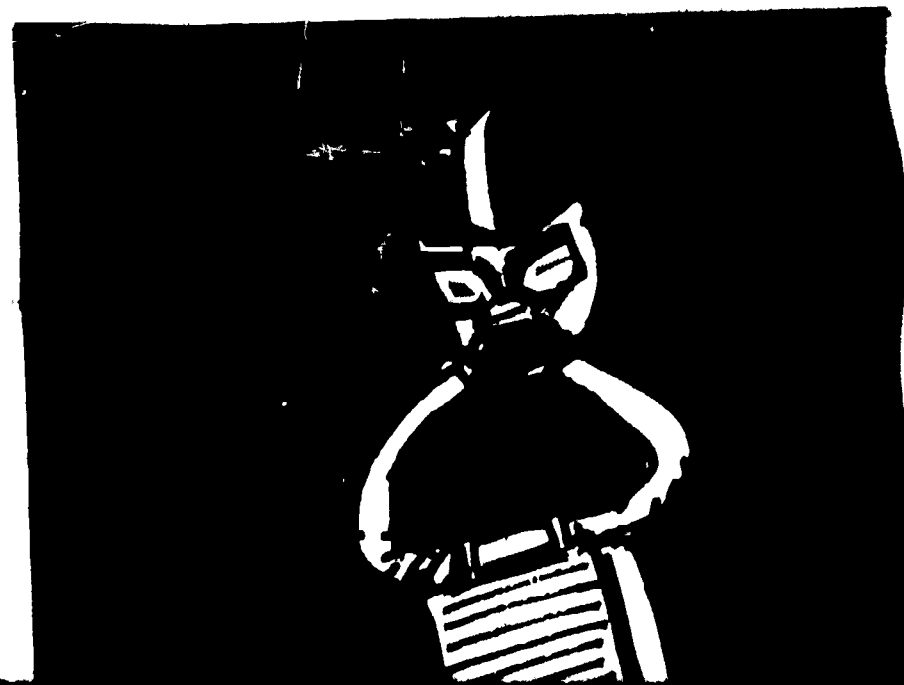

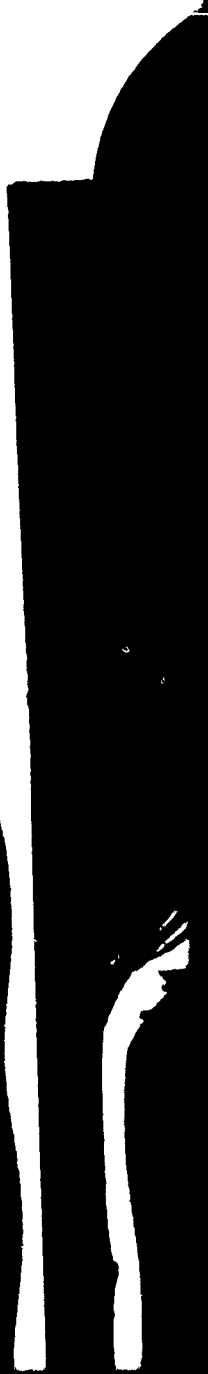

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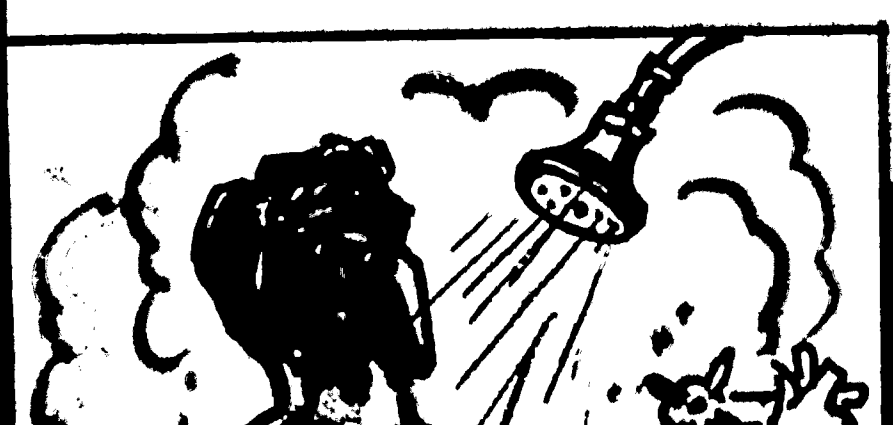

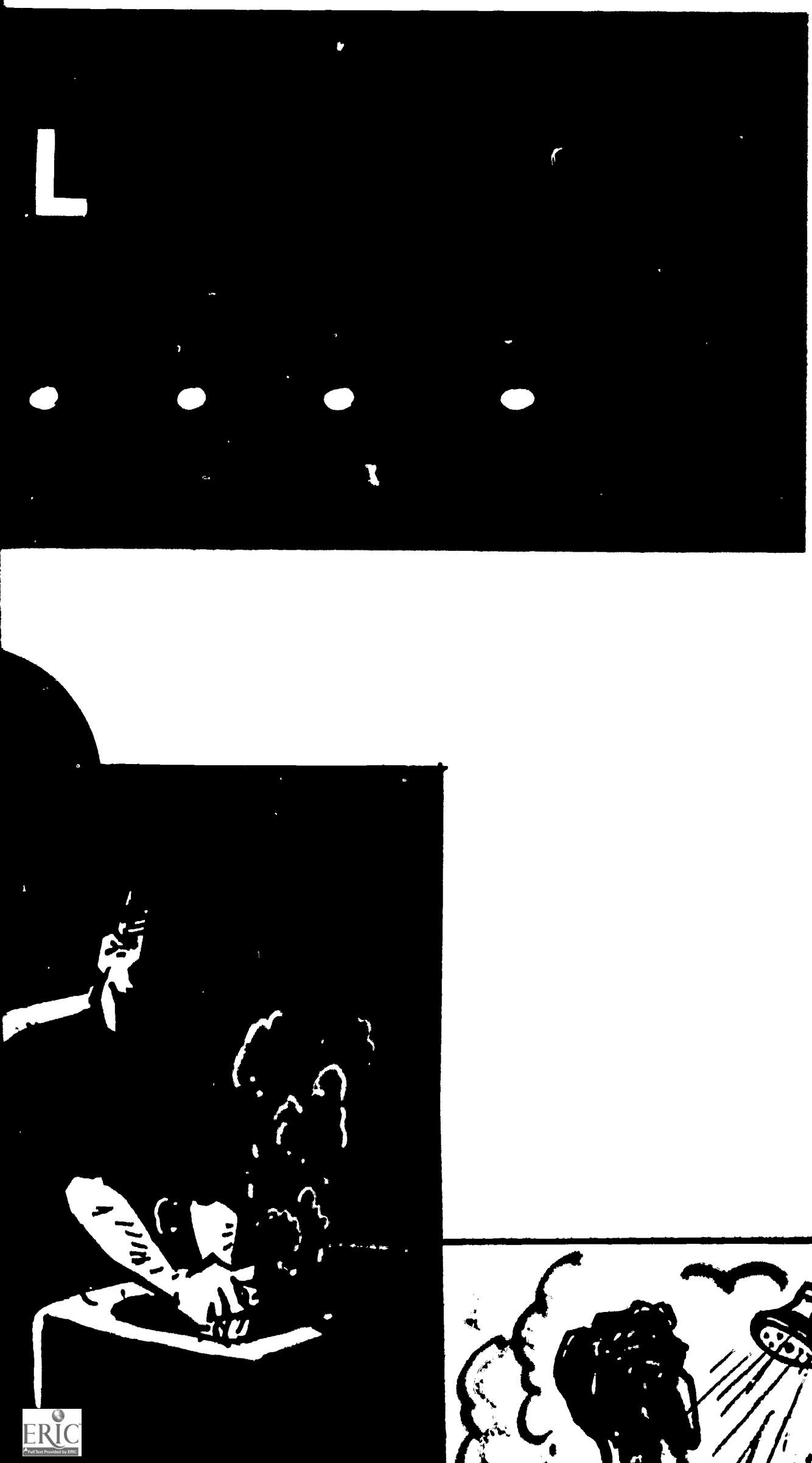
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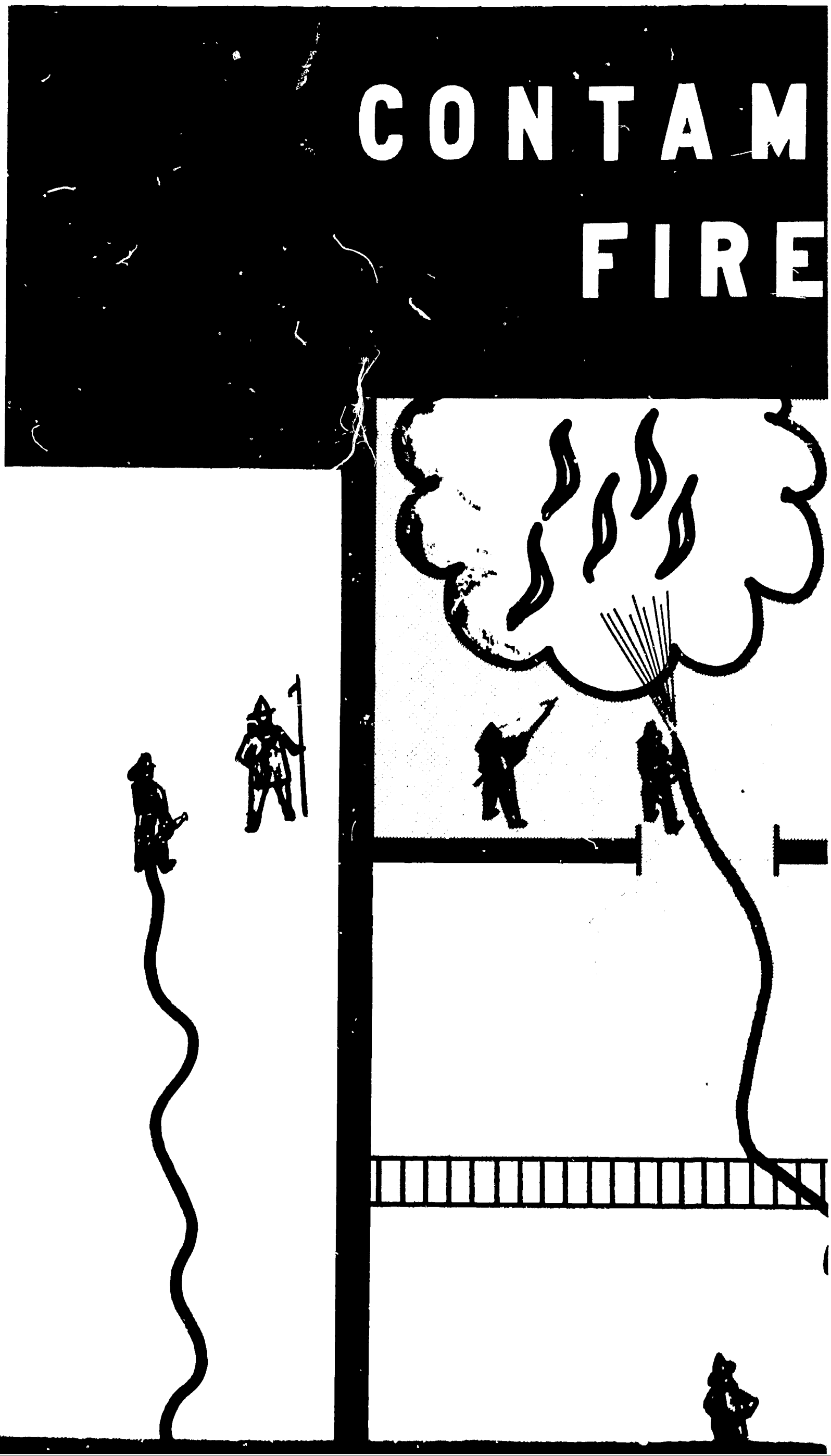
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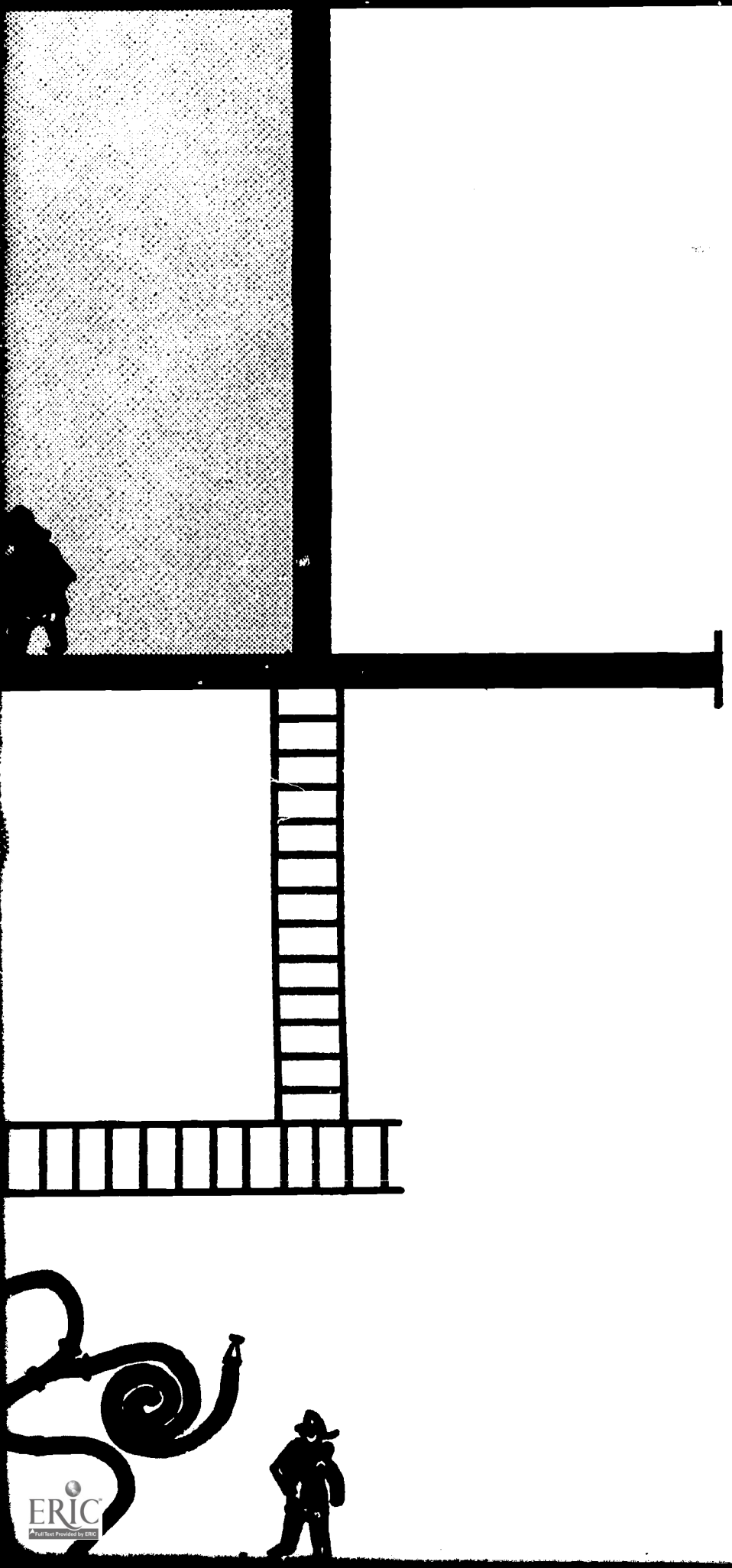

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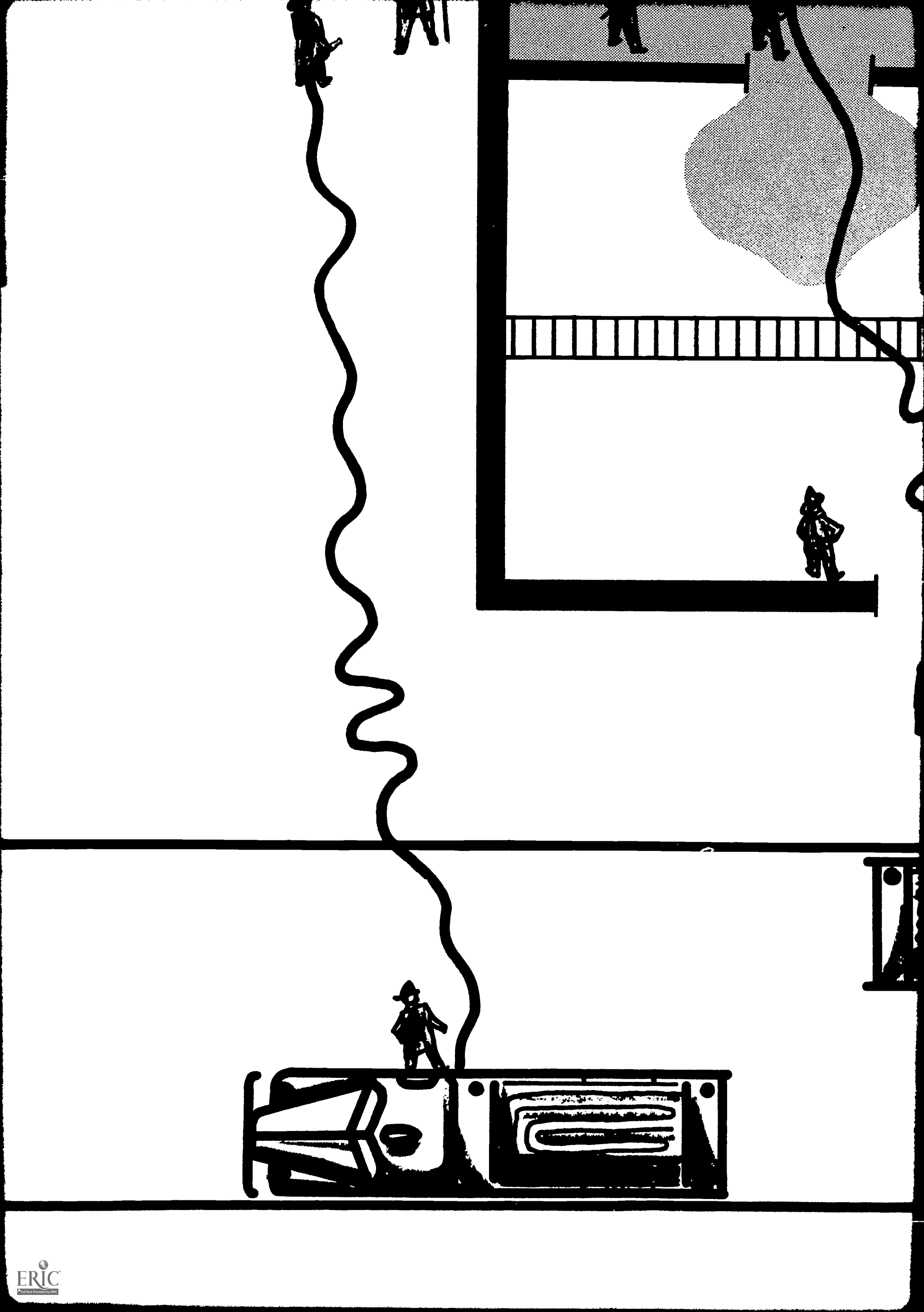

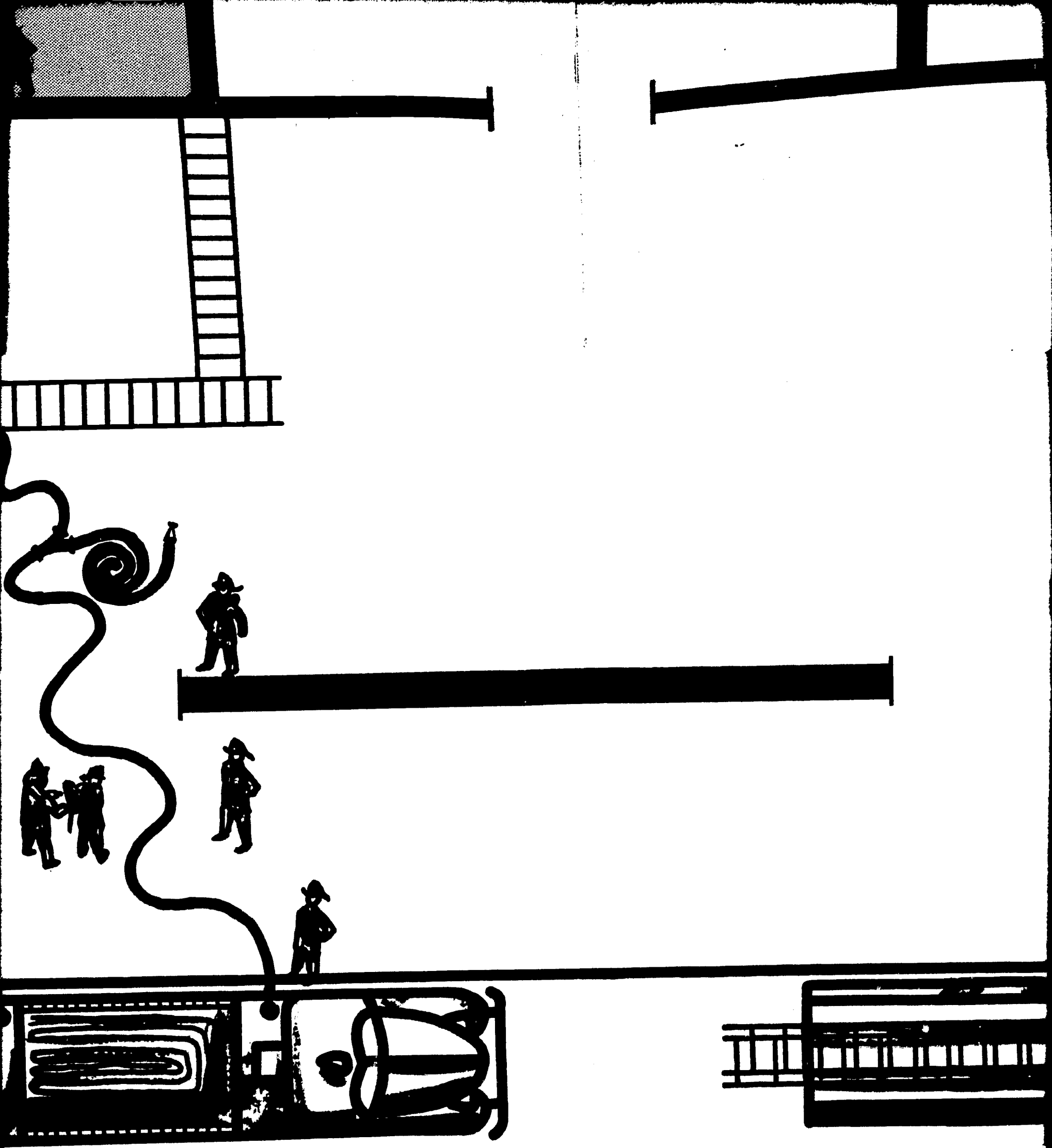

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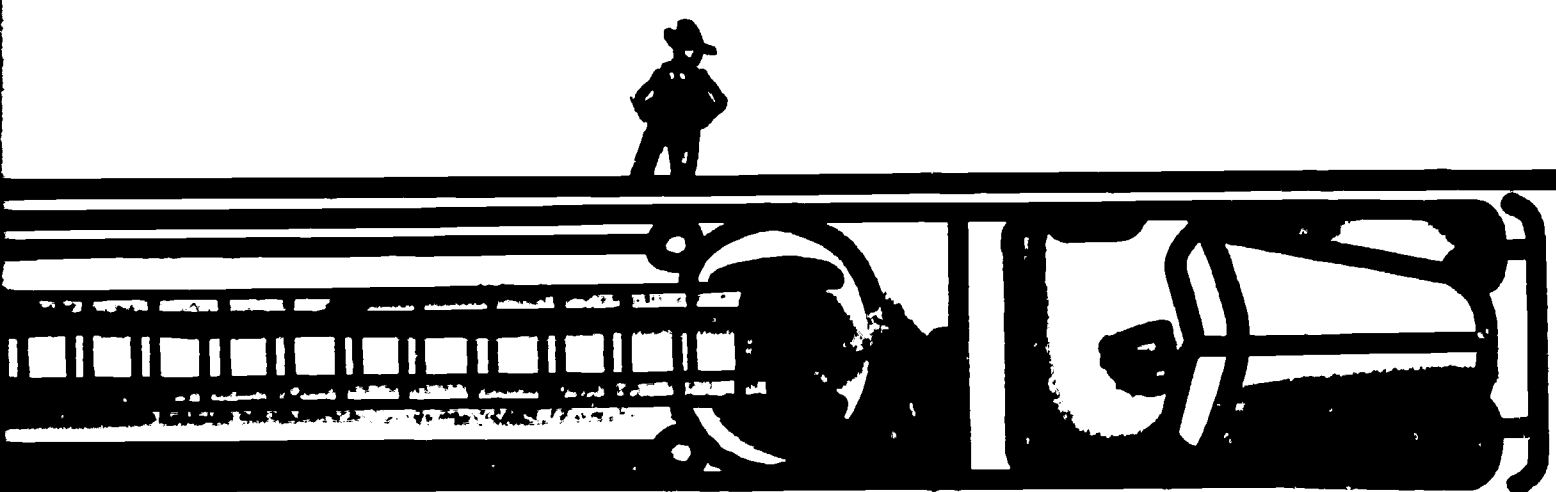

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NUCLEAR CHAIN REACTION

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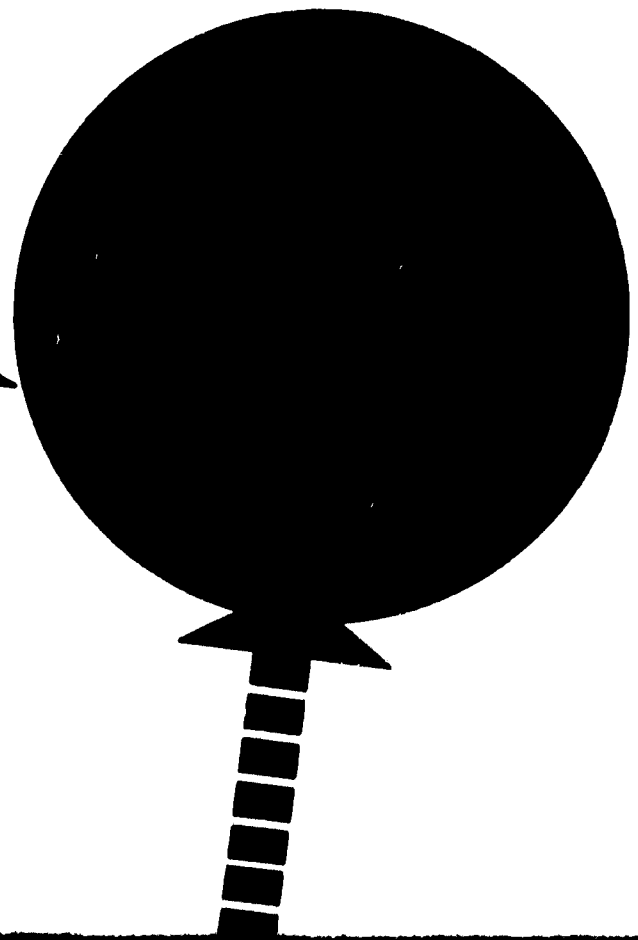

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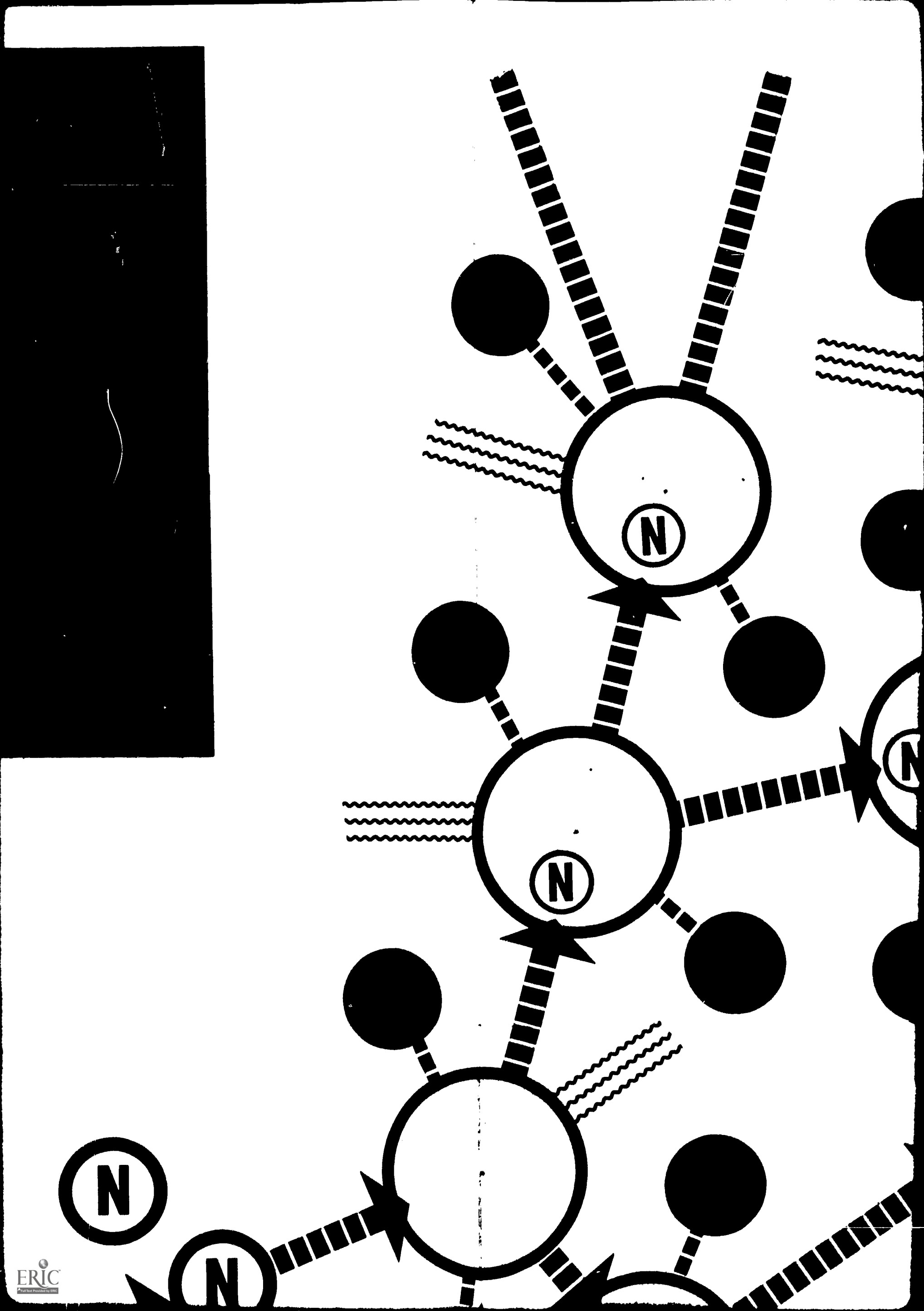
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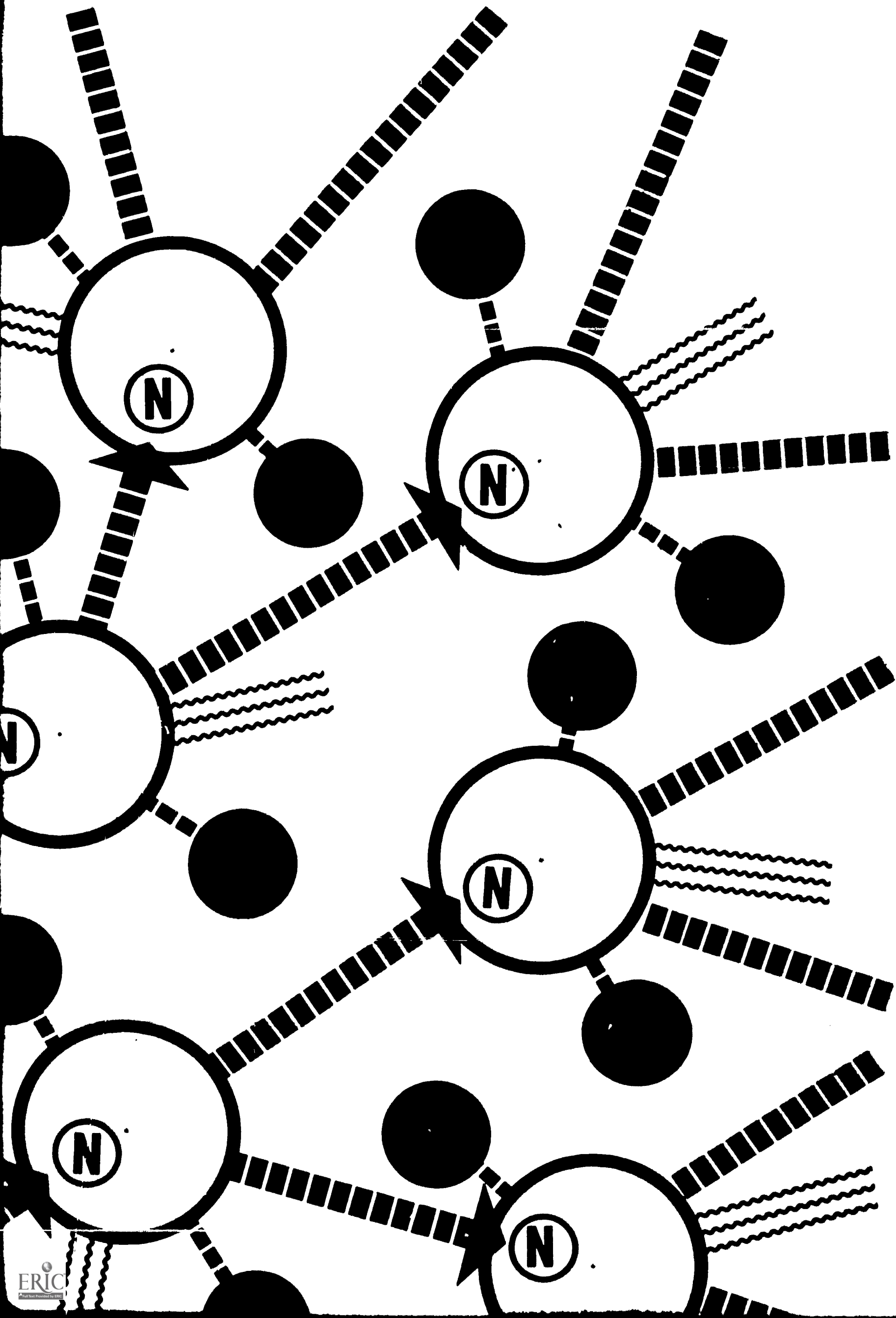
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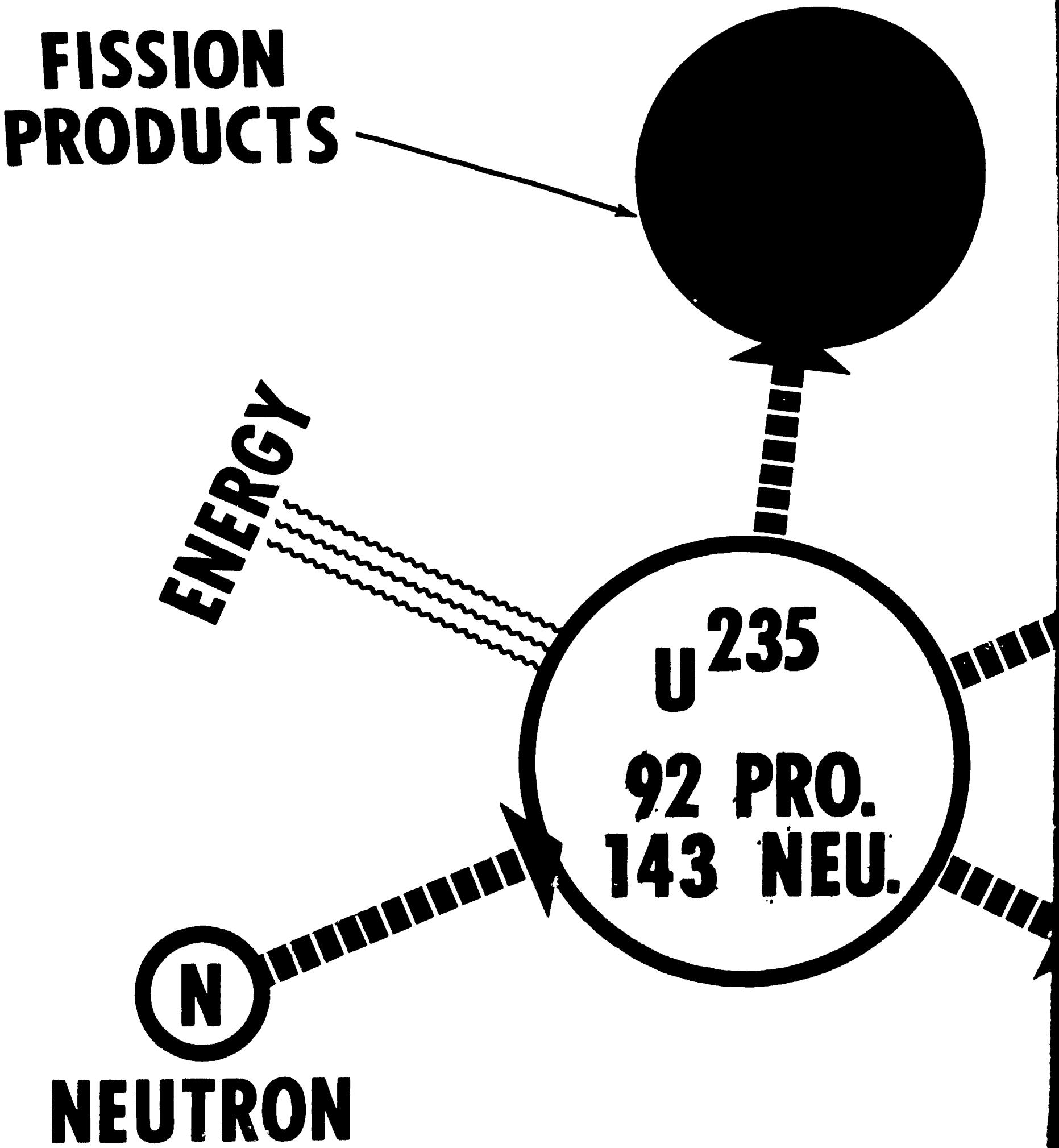

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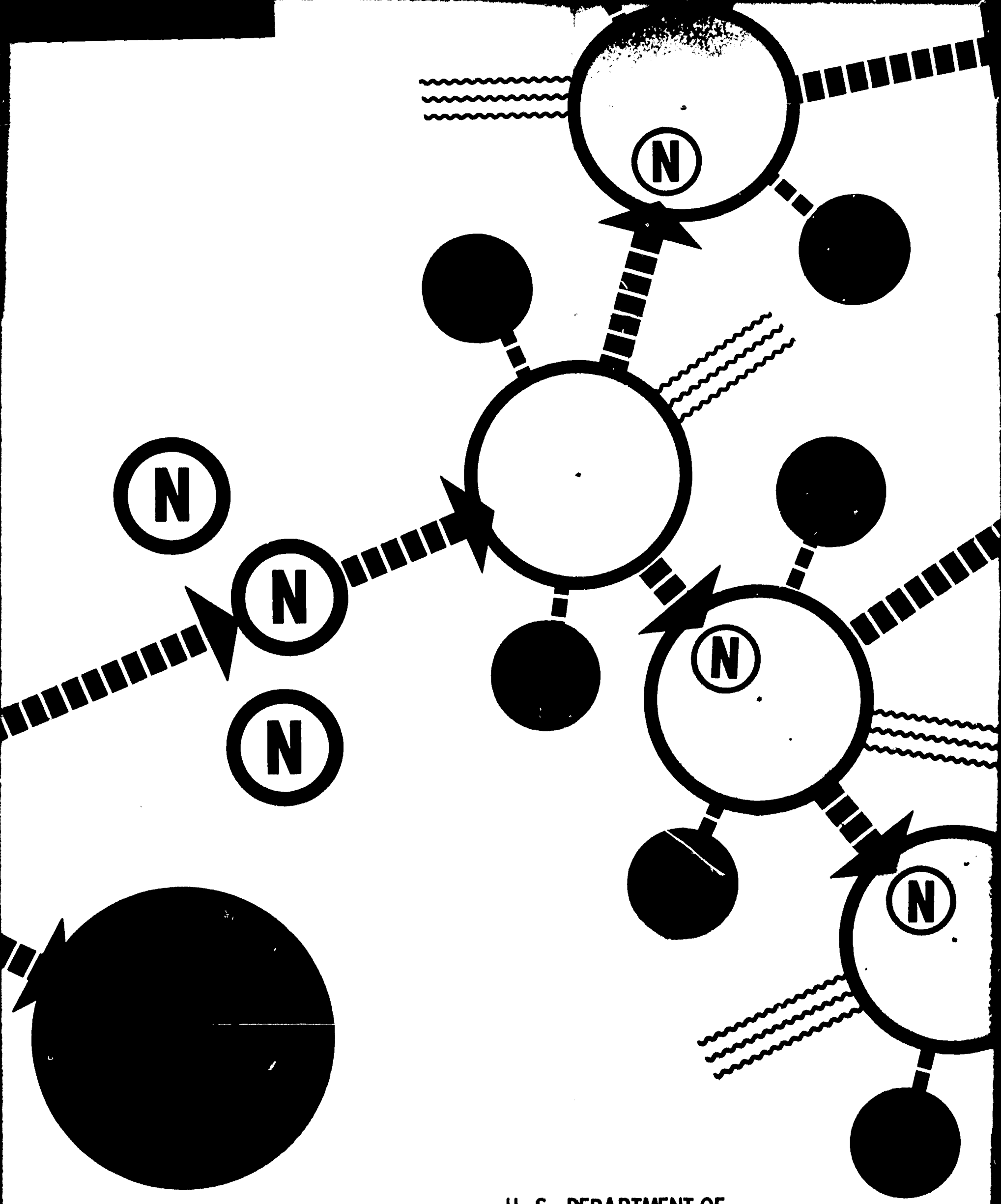

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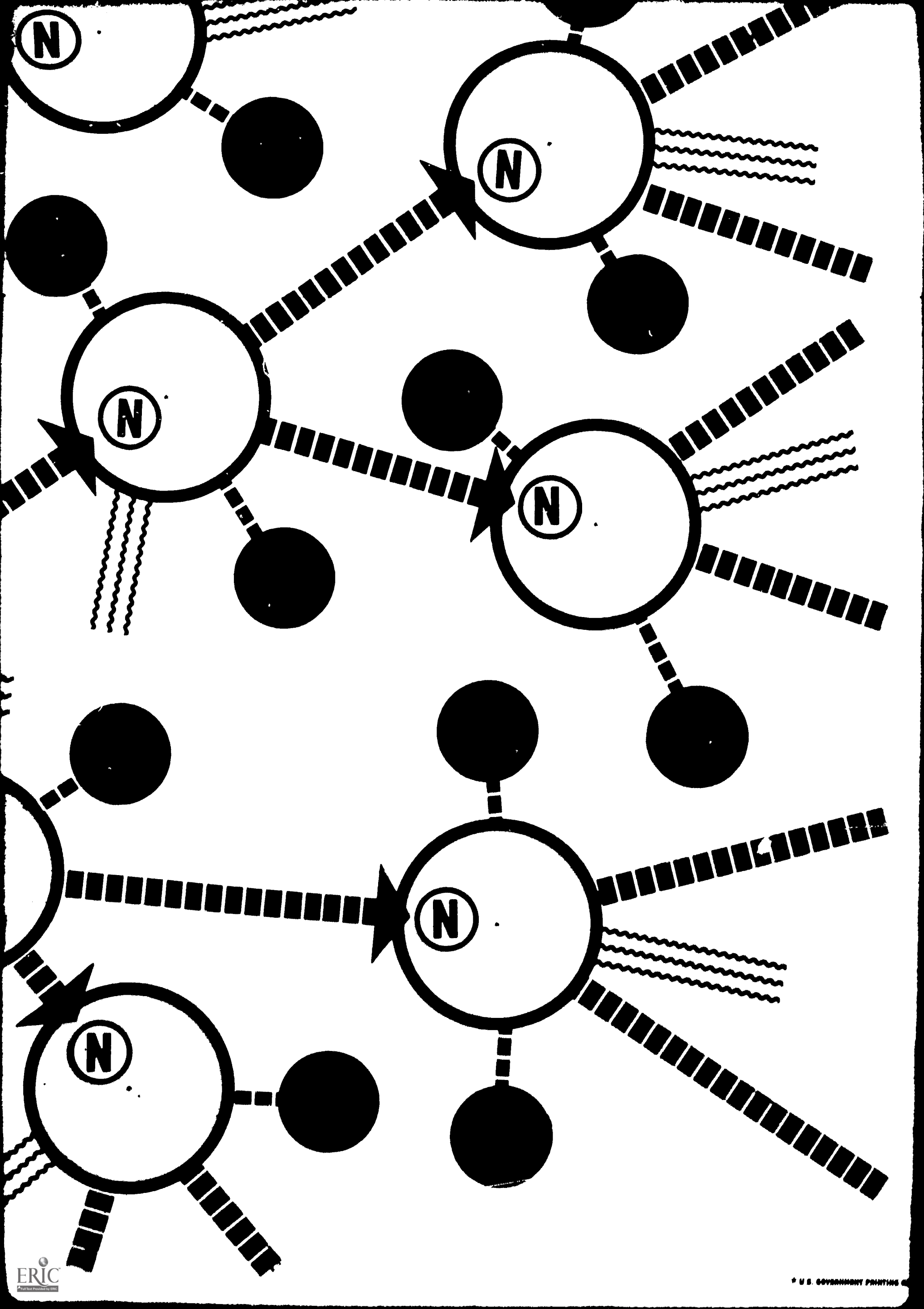

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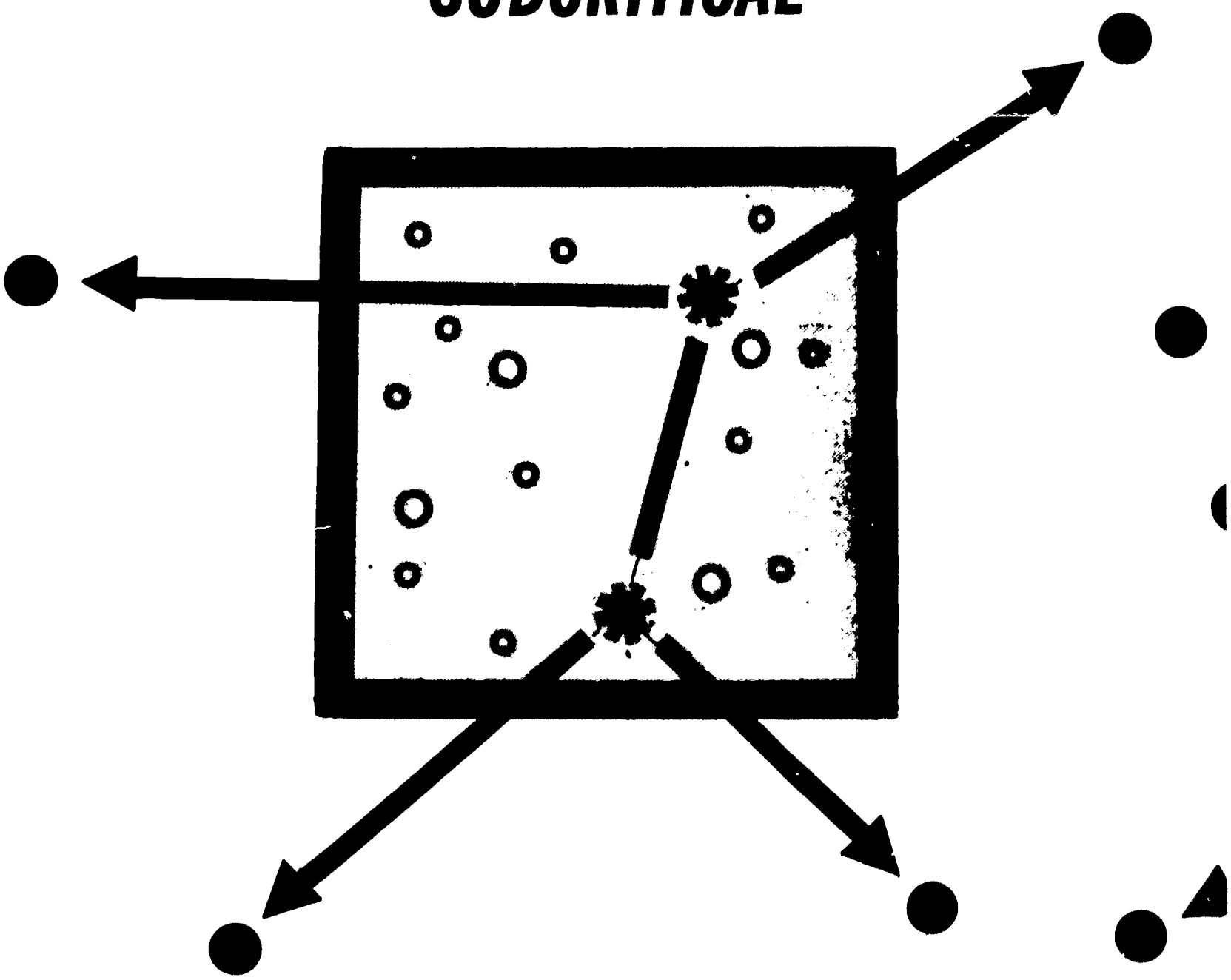

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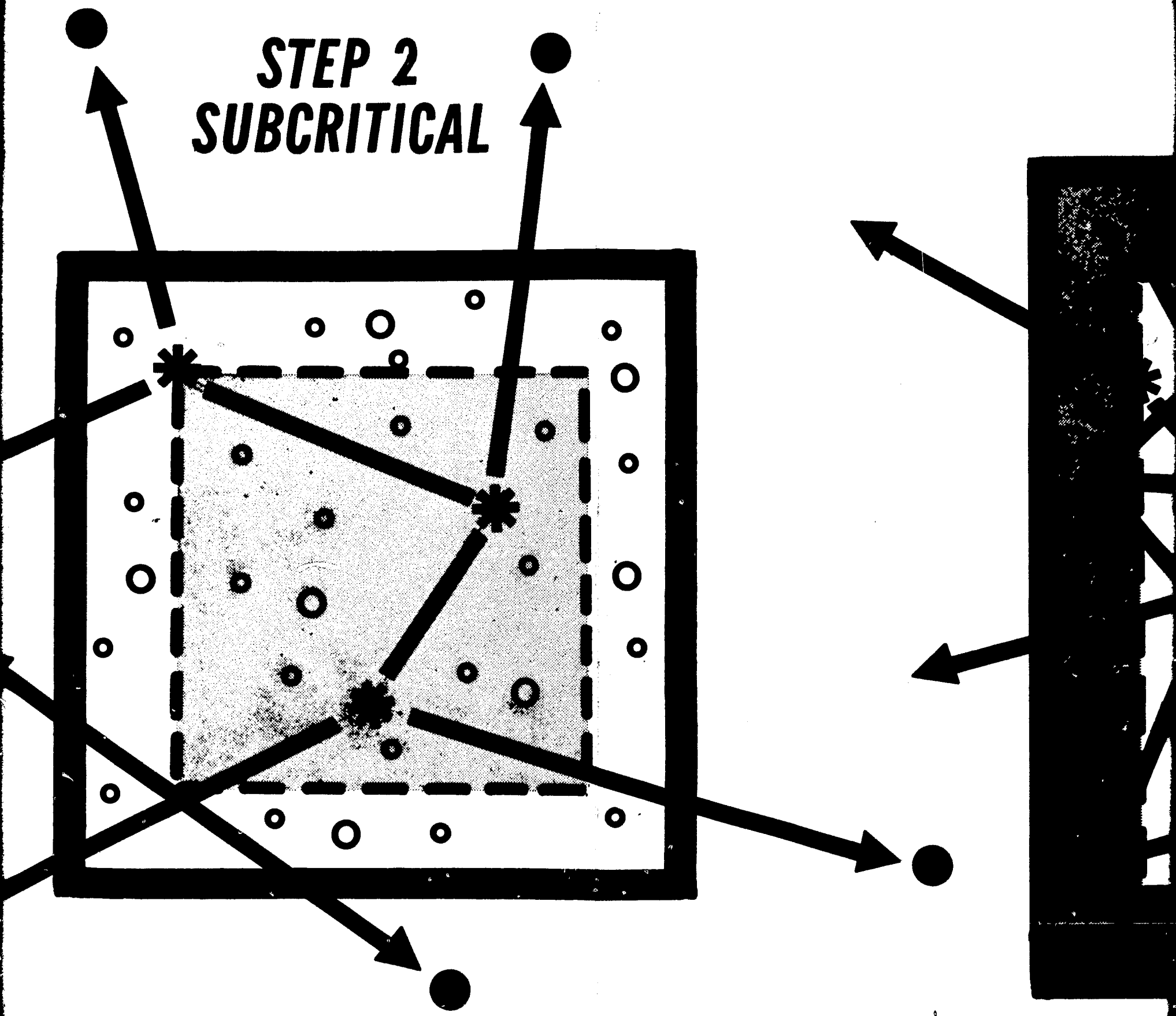

SS CONCEPT

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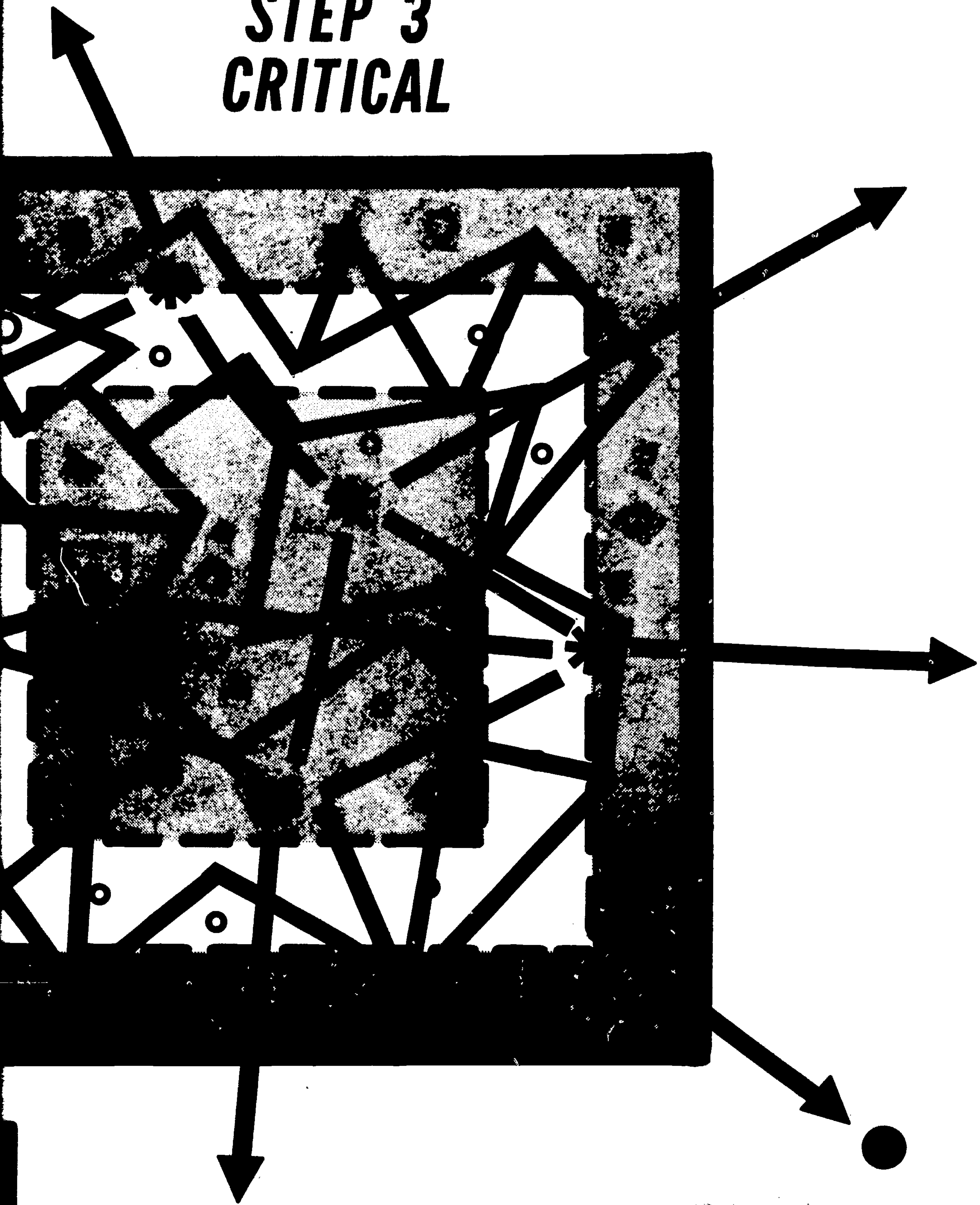
STEP 3 CRITICAL



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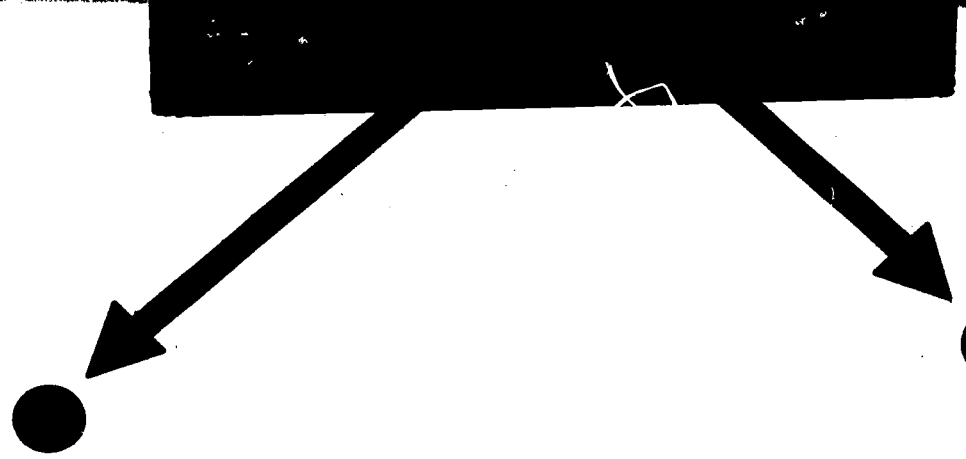

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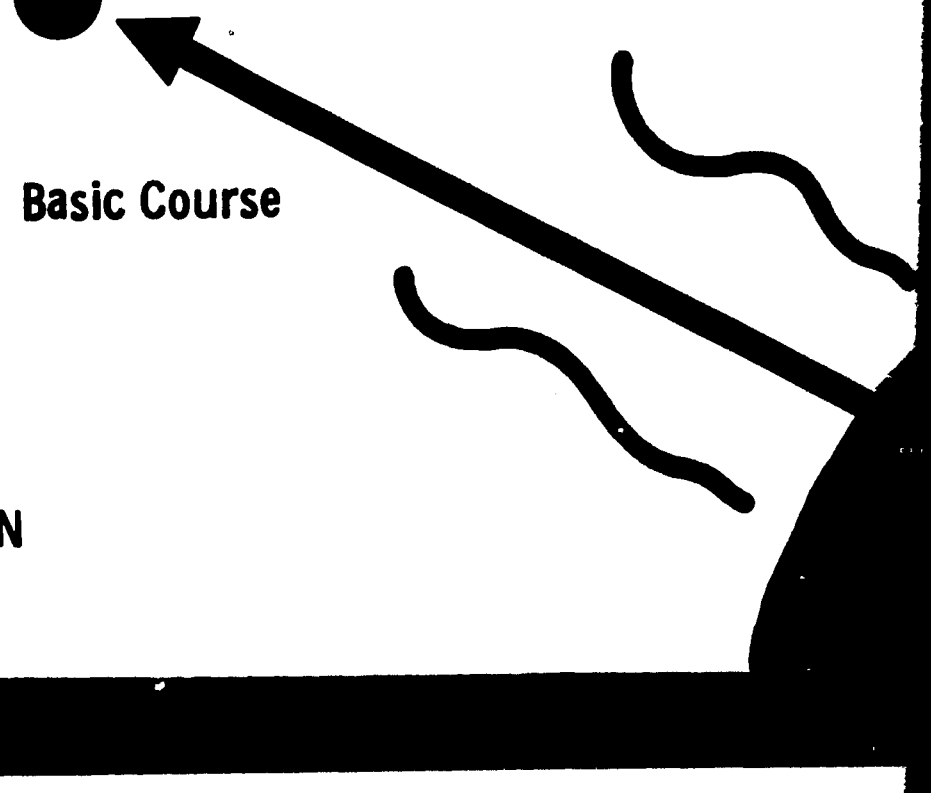

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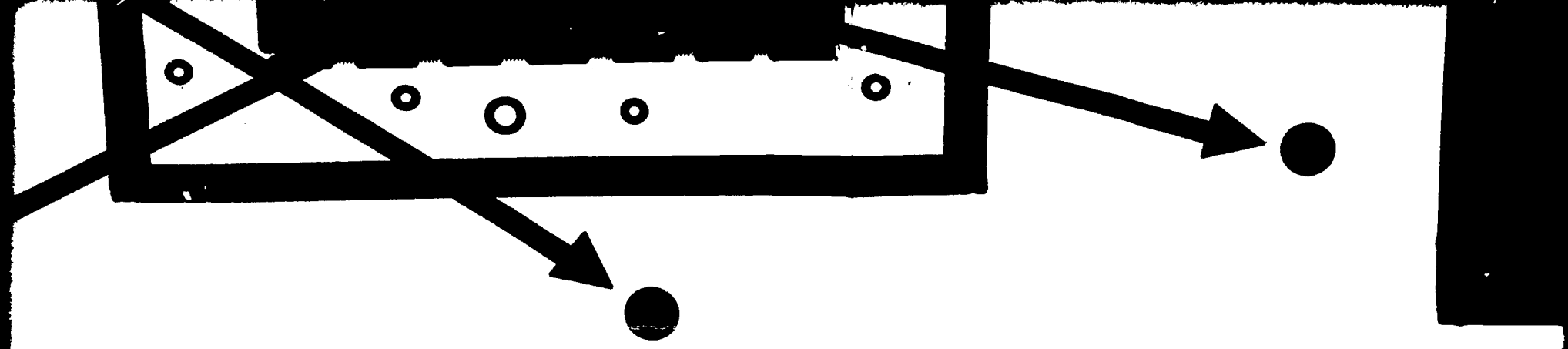

ASS CONCEPT

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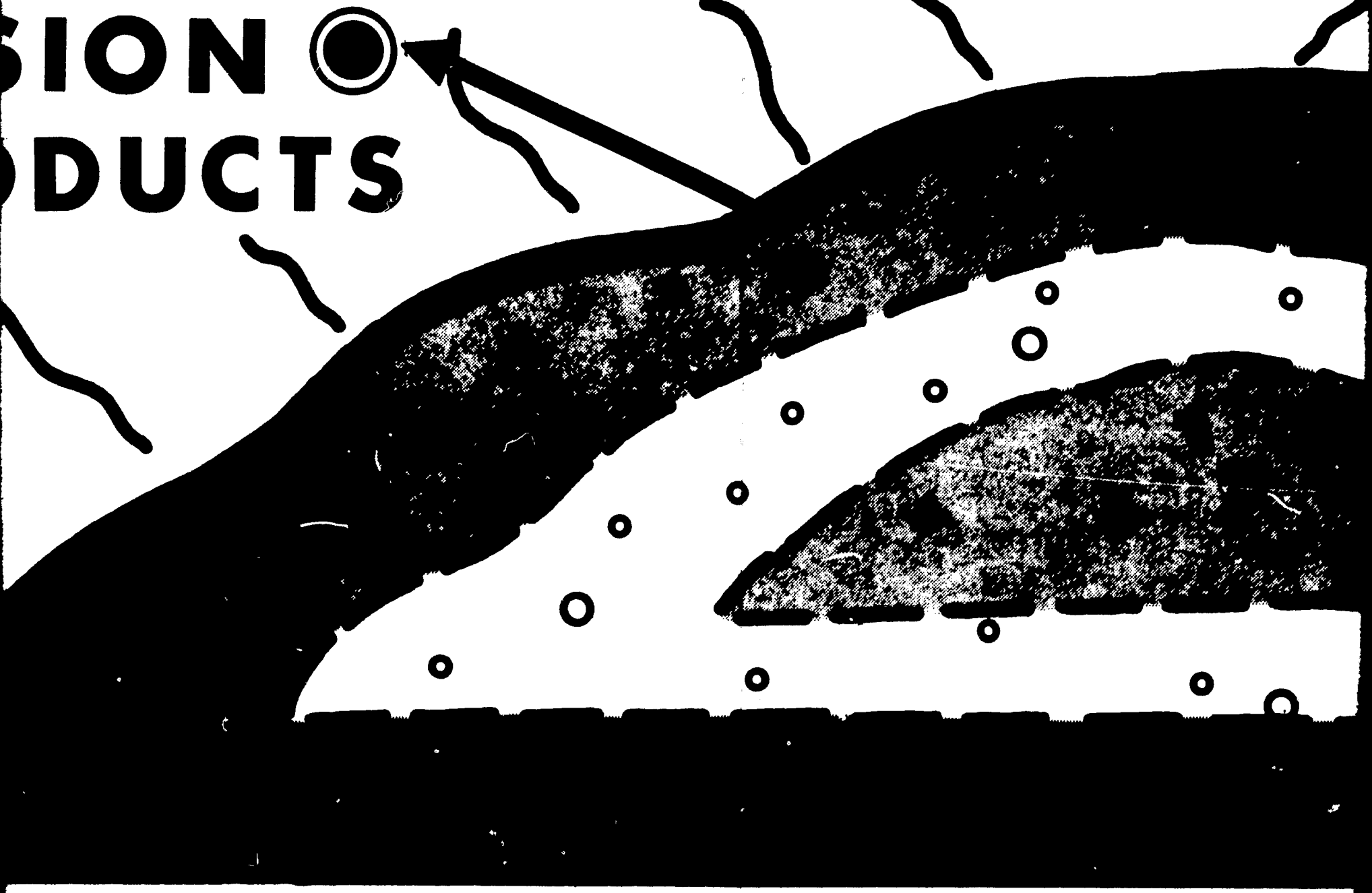
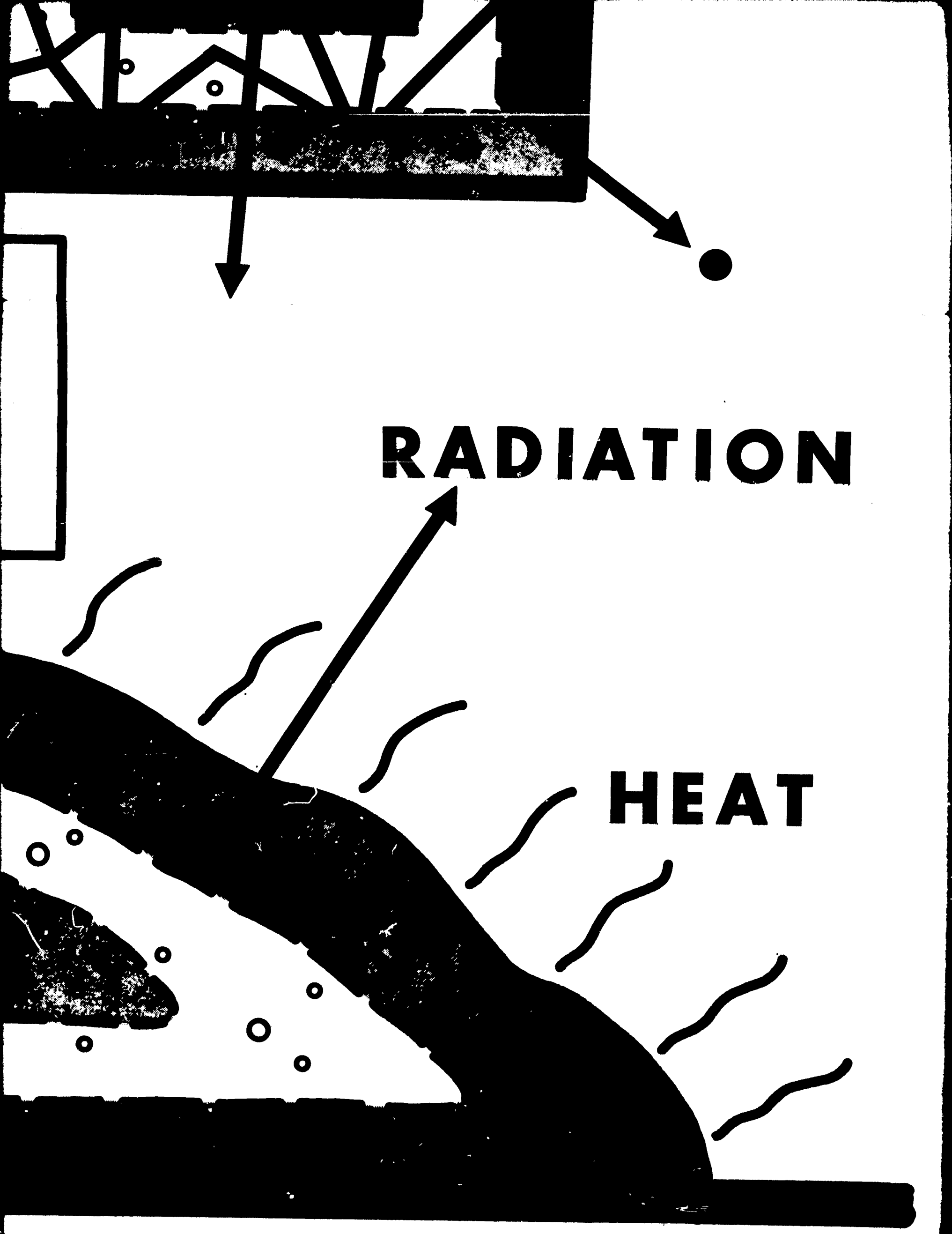
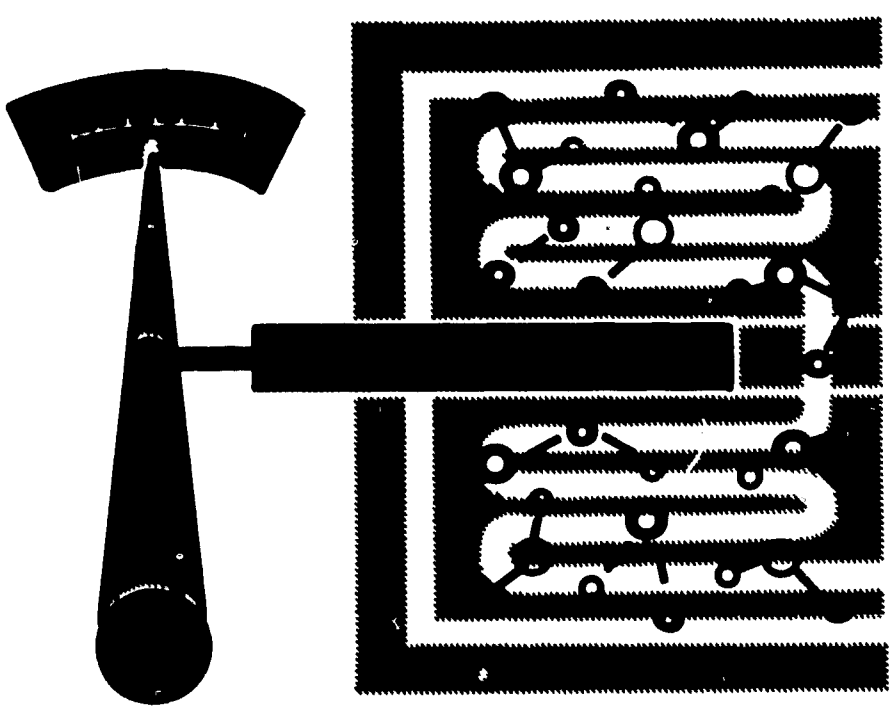


STEP 4 MELTDOW

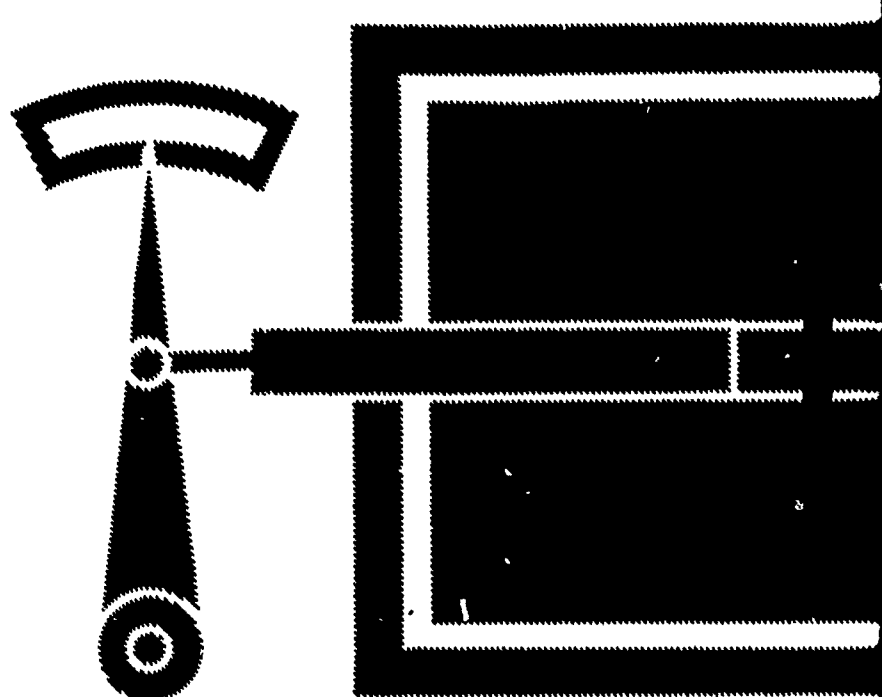


STEP 1.



CONTROLLING CHAIN REACTION

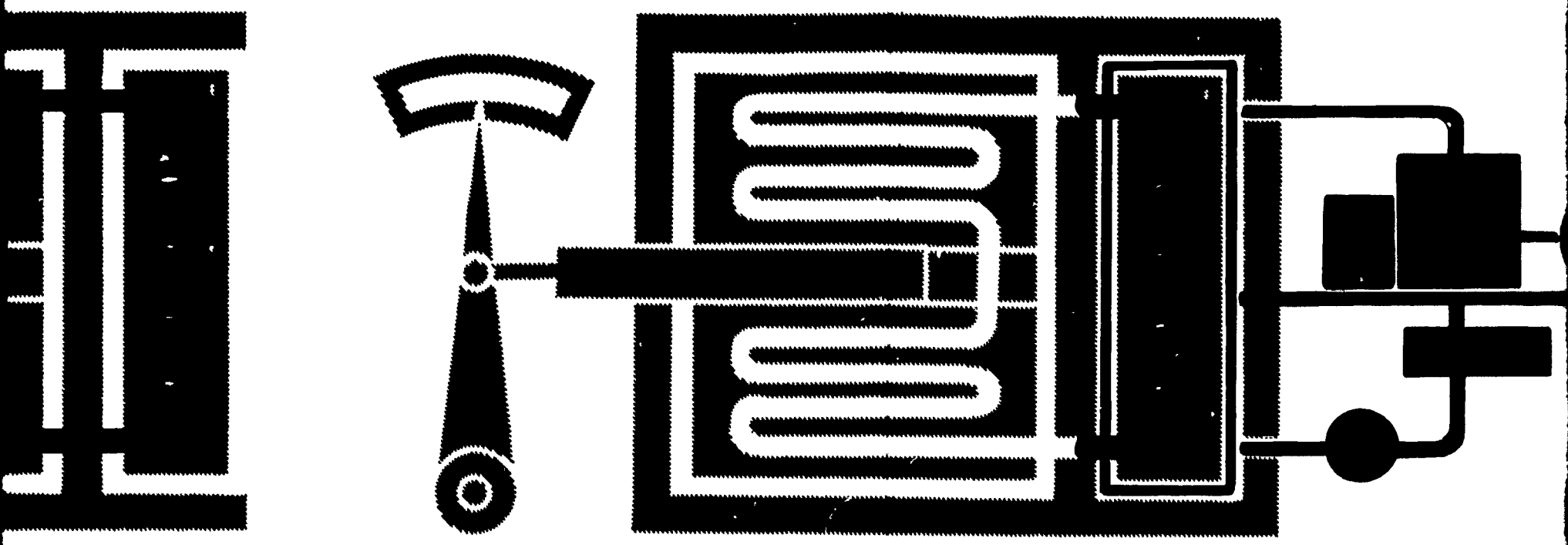
STEP 2



REMOVING HEAT CREATED BY REACT

CONCEPT OF

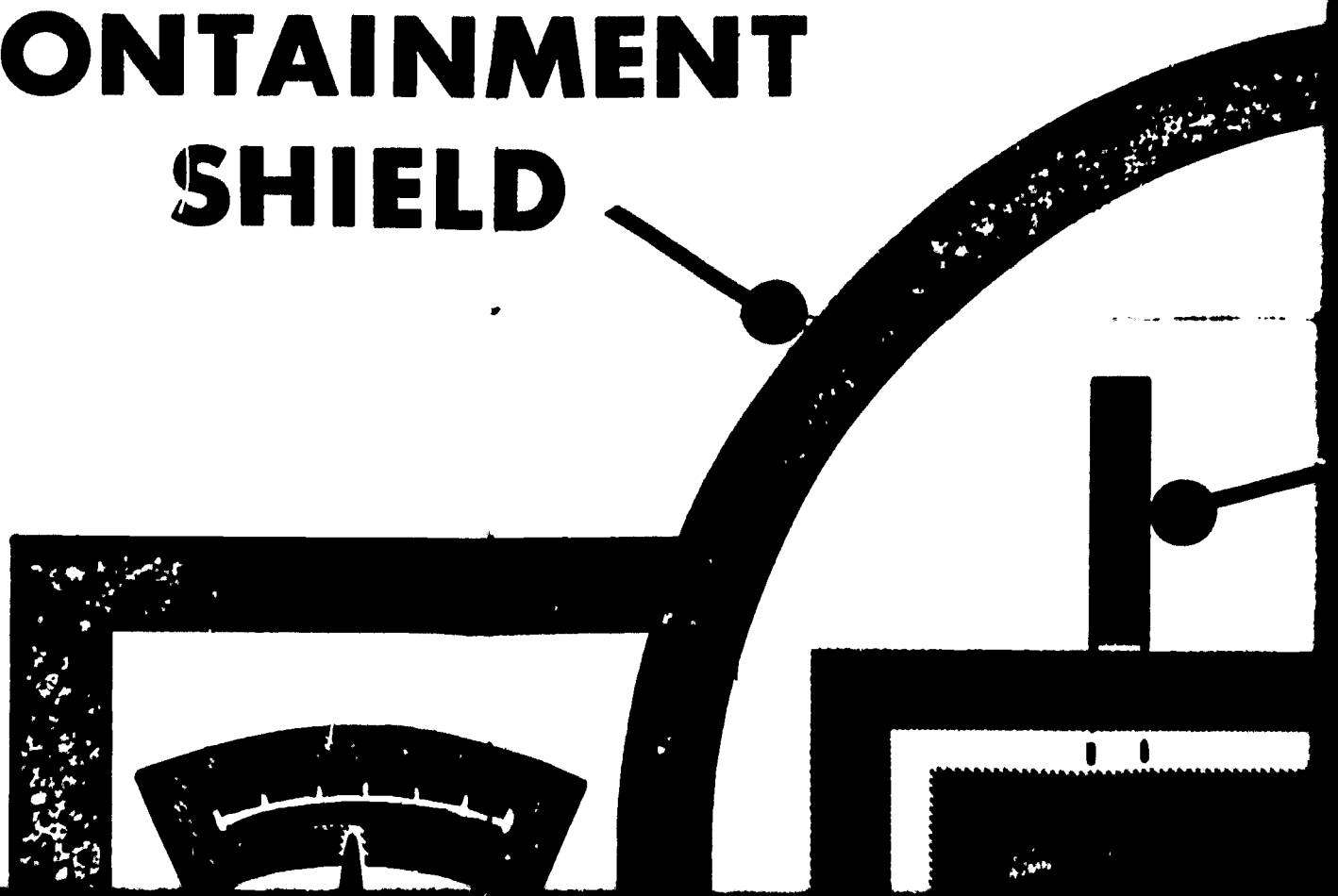
. . . STEP 3 . . .



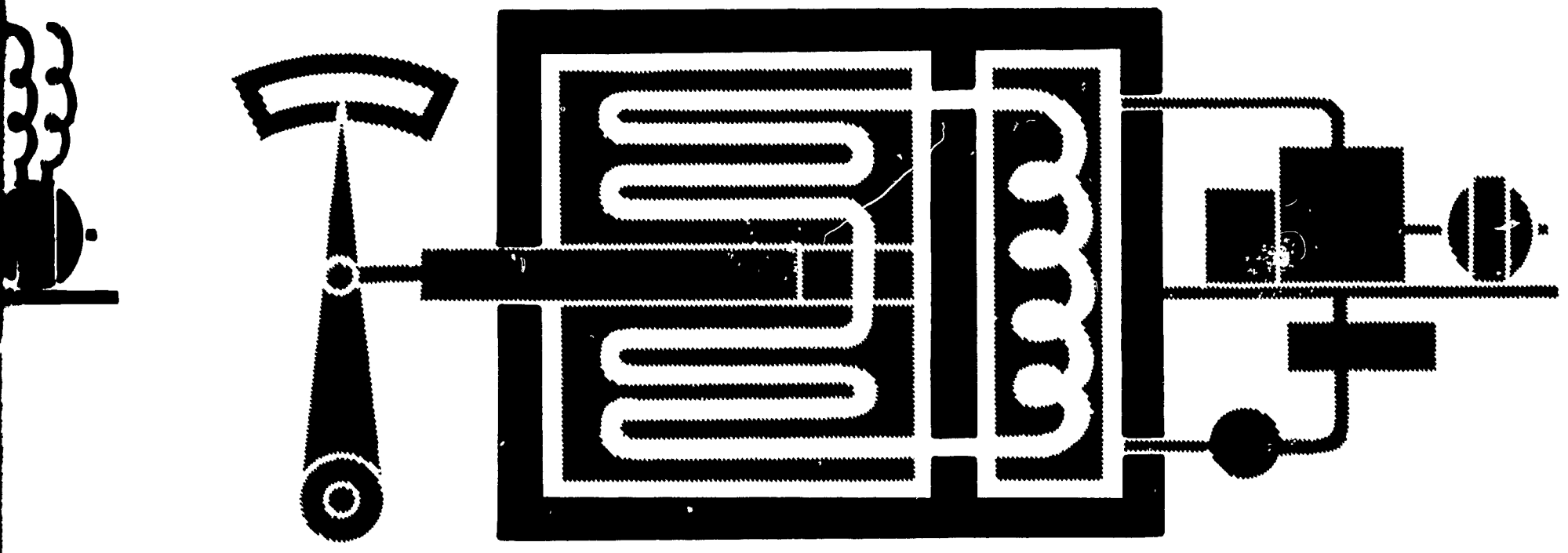
TION

HEAT EXCHANGER PRODUCES STEAM
THRU TURBO-GEN. FOR ELEC. POWE

CONTAINMENT
SHIELD



STEP 4....



SHIELDING PROTECTS AGAINST NEUTRONS AND RADIATION

CONCEPT OF

ATOMIC POWER REACTOR

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and
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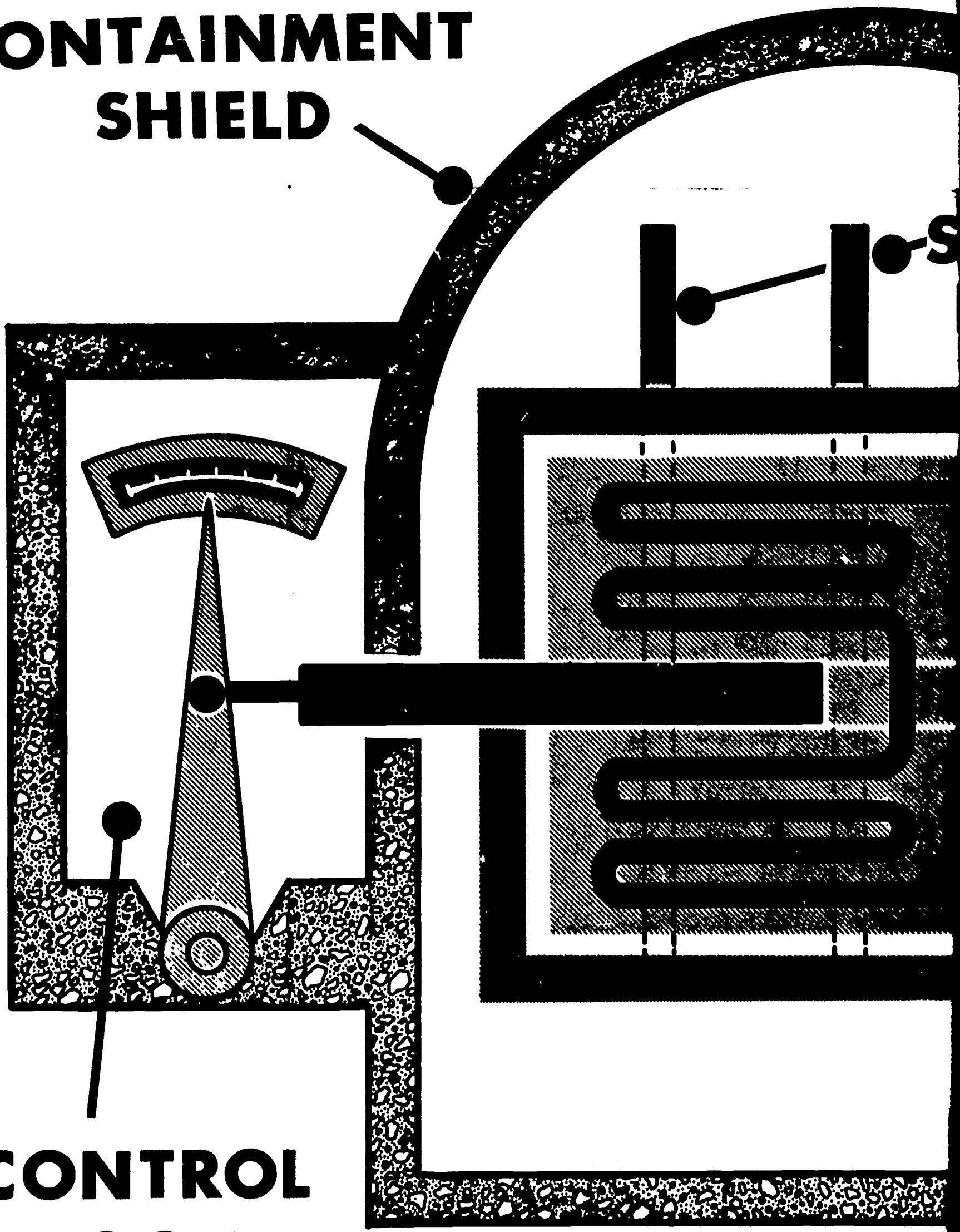
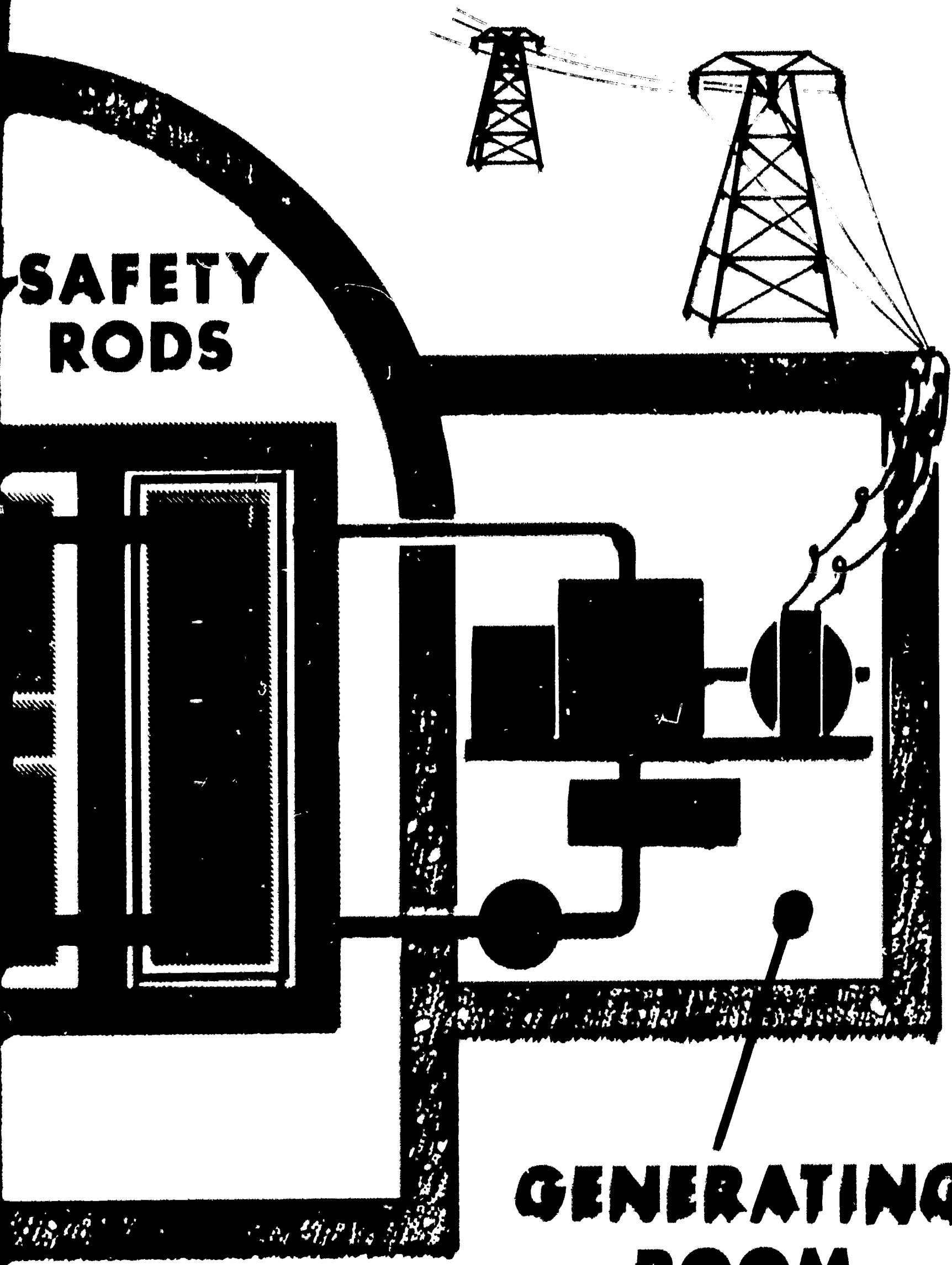
Office of Industrial Relation

CONTAINMENT SHIELD



CONTROL ROOM

STEP



5

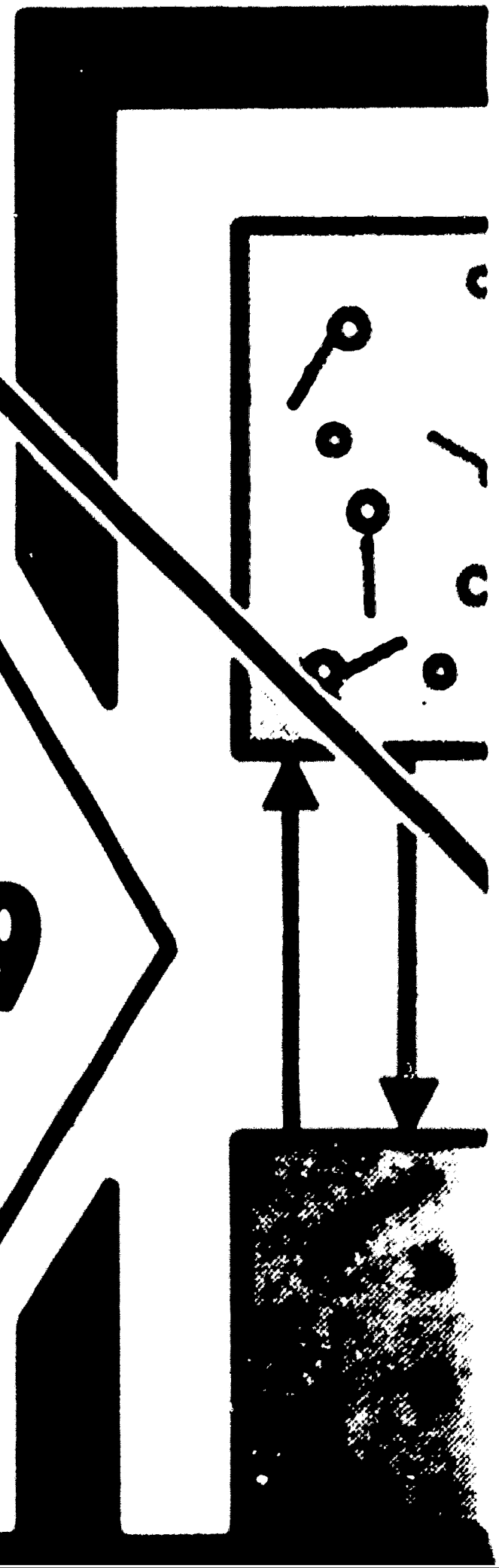
HOW THIN

NEUTRON FLUX

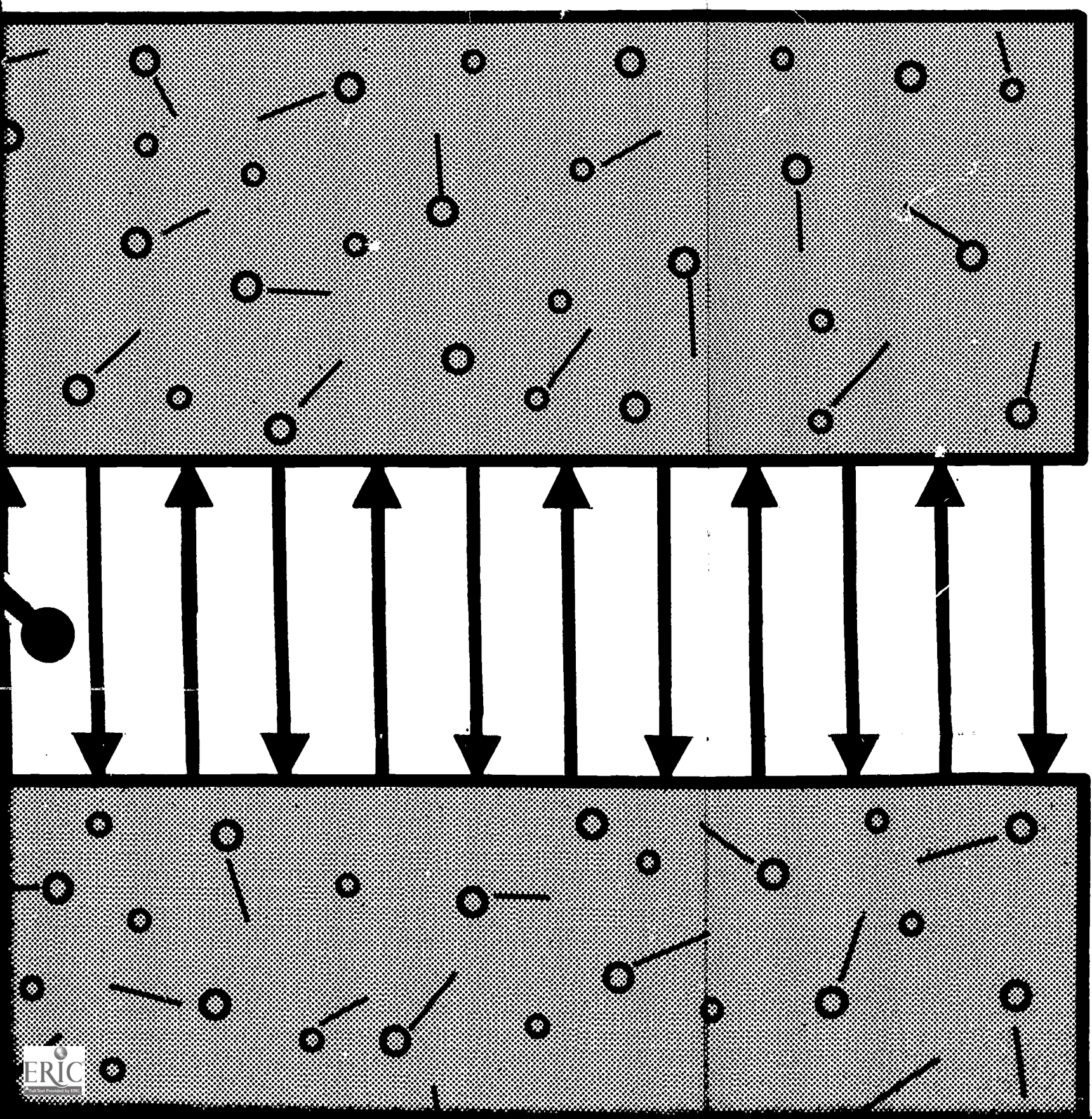
INSERTED IN

COBALT – 59

27 PROTONS
32 NEUTRONS



GS BECOME RA



OE

ADIOACTIVE REACTOR

PICKS UP 1 NEUTRON

. . . . COBALT – 60

27 PROTONS
33 NEUTRONS

IOACTIVE

REACTOR

KS UP 1 NEUTRON

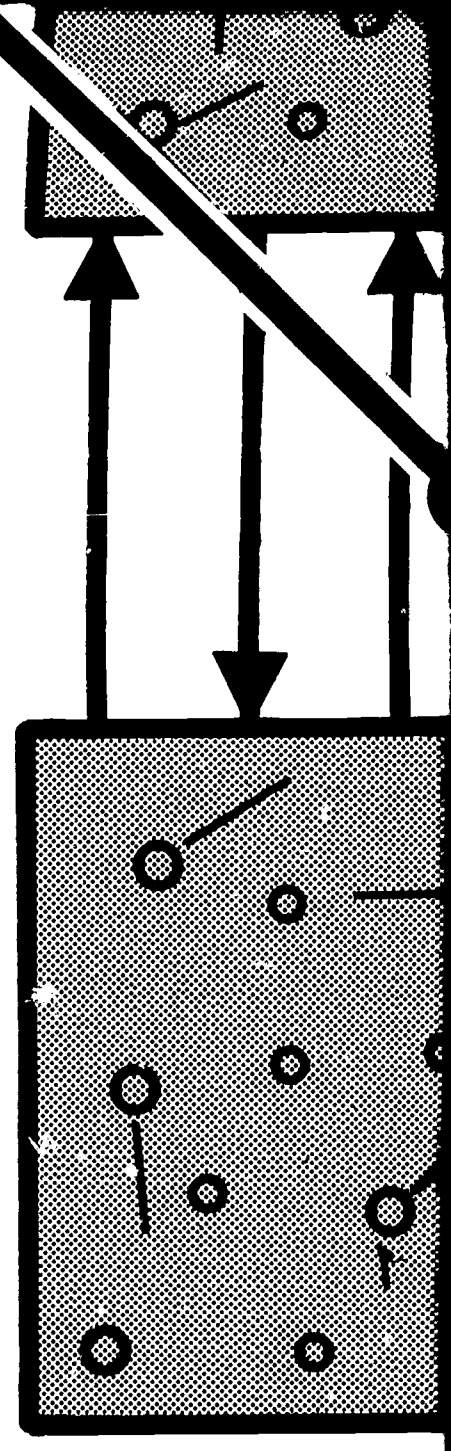
. . COBALT – 60

27 PROTONS
33 NEUTRONS

INSERTED IN

COBALT – 59

27 PROTONS
32 NEUTRONS



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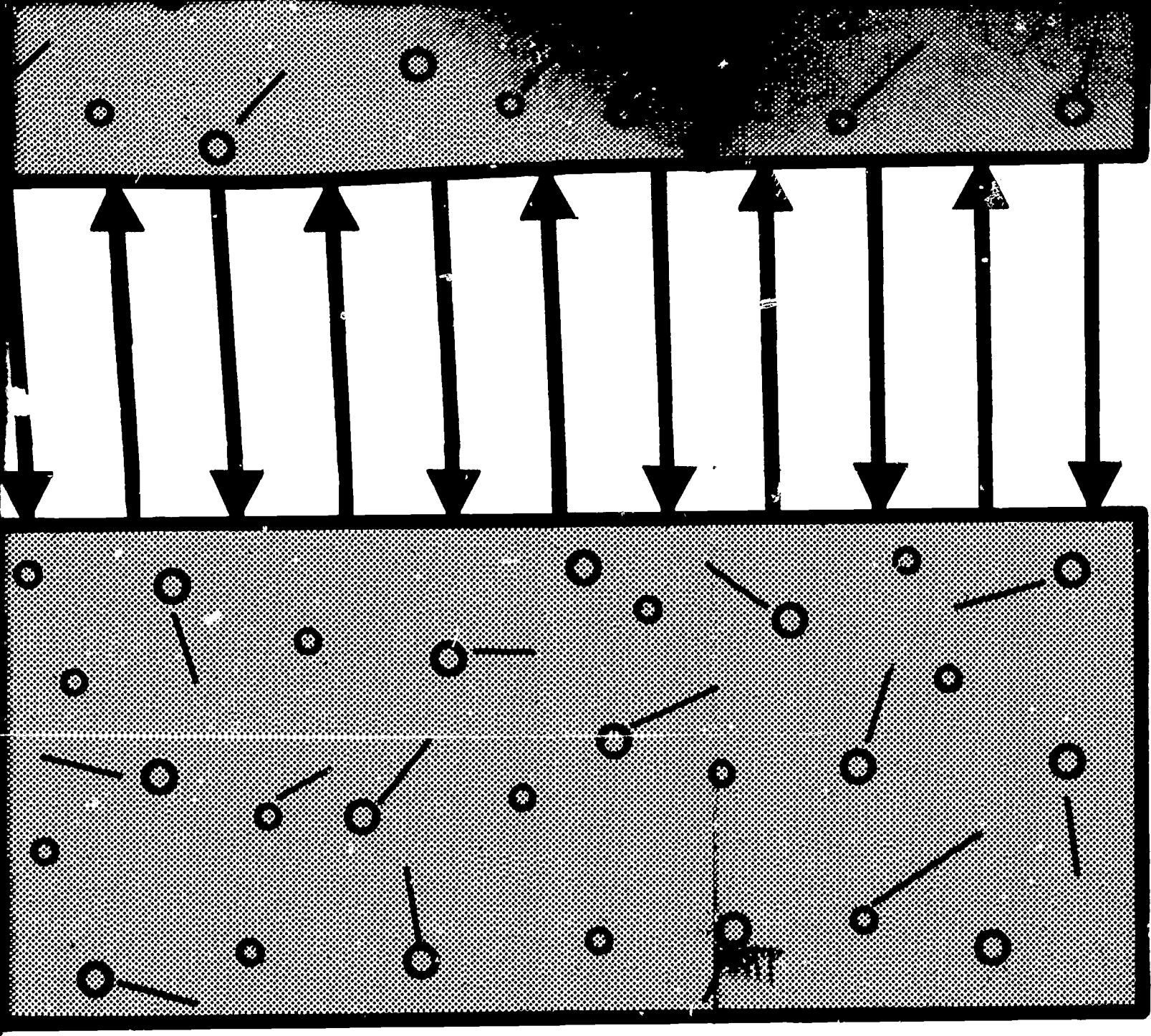
NOTE

ONLY A SMALL NU
CAPTURE. THIS DE
STRENGTH OF TH



BER OF COBALT-59 ATOMS BECOME RADIOACTIVE
ENDING ON HOW LONG THE COBALT-59 IS LEFT
NEUTRON FLUX

KS UP 1 NEUTRON

. . COBALT – 60

27 PROTONS
33 NEUTRONS

●

COBALT – 59 – BECOMES

COBALT – 60 – AFTER

BEING IN REACTOR

OBALT – 60 BY NEUTRON

THE REACTOR AND THE

U.S. GOVERNMENT PRINTING OFFICE : 1961 O—

RADIATION PRE-FIRE PLAN

COMPANY OR PERSON (LICE

ADDRESS (LOCATION OF ISO

ISOTOPE	LOCATION IN PLANT OR OUTSIDE AREA	QUANTITY ON HAND (Curies)	TA

RADIATION

PRE-FIRE

N NO. _____

GENSEE) _____

OTOPES) _____

FIR

HOW CON. AINED	PRINCIPAL RADIATION EMITTED	RADIATION LEVEL OF SOURCE (Unshielded)	HAZARD		REMARKS A
			External	Internal	

OE-84022-21

PLAN

(SUGGESTED)

DEPT.

DATE

D / OR PROCEDURES

ADDITIONAL INFORMATION: Sprinklers, Valves, Venti
Filters, Fire Walls, Doors
Flammable Liquids, Gases,

NOTE: USE REVERSE SIDE FOR CONTINUATION OF INFORMATI
AND PLAN OF BUILDING

...PED	...OURCE (Unshielded)	External	internal	REMARKS AND

ng Systems, Ducts, its, Water Drainage, .	PERSON/S RESPONSIBLE FOR RADIOISOTOPES-TO BE CONTACTED IN EMERGENCY	TELEPH... PLANT

OR PROCEDURES

ONE NO.

HOME

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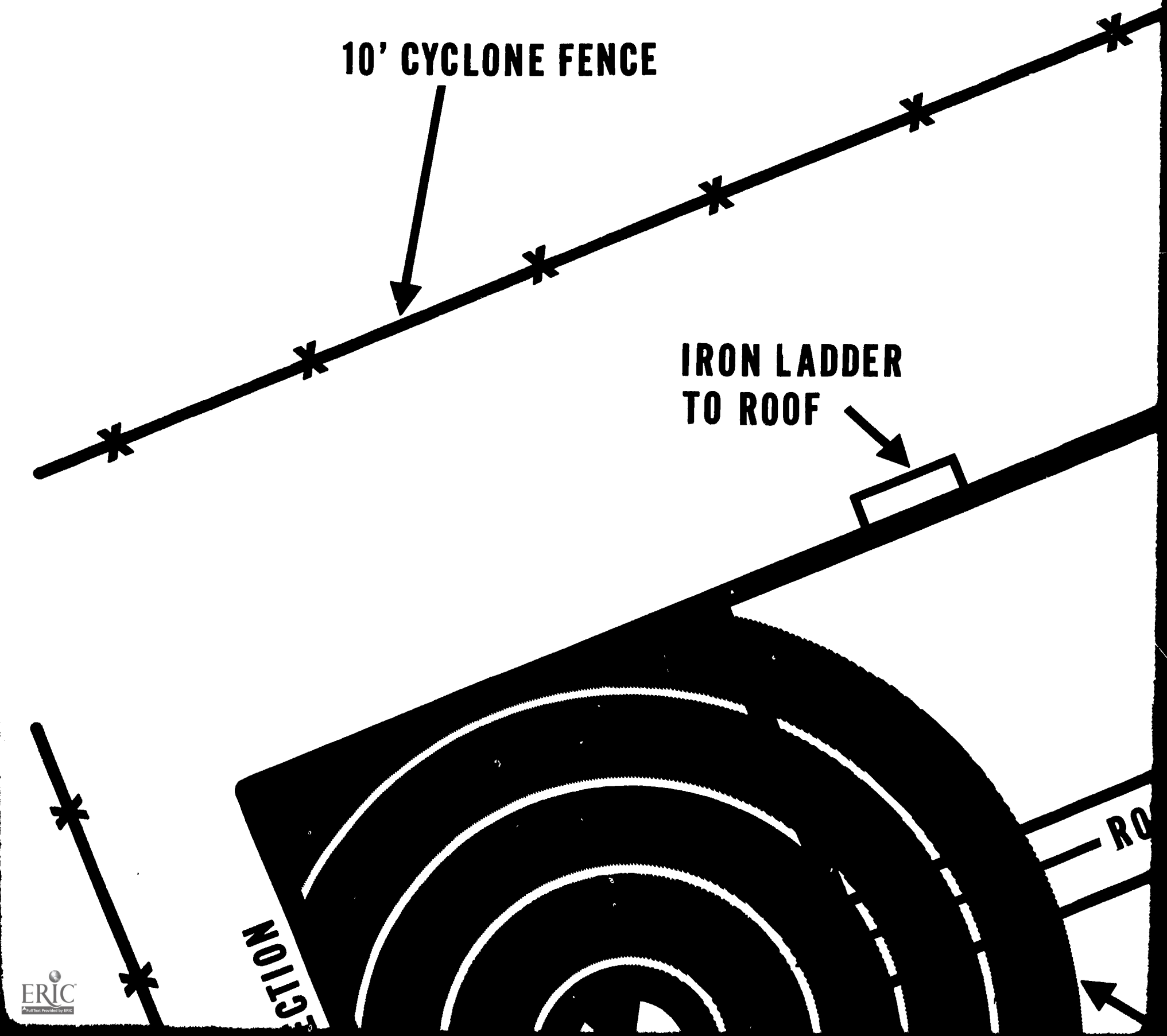
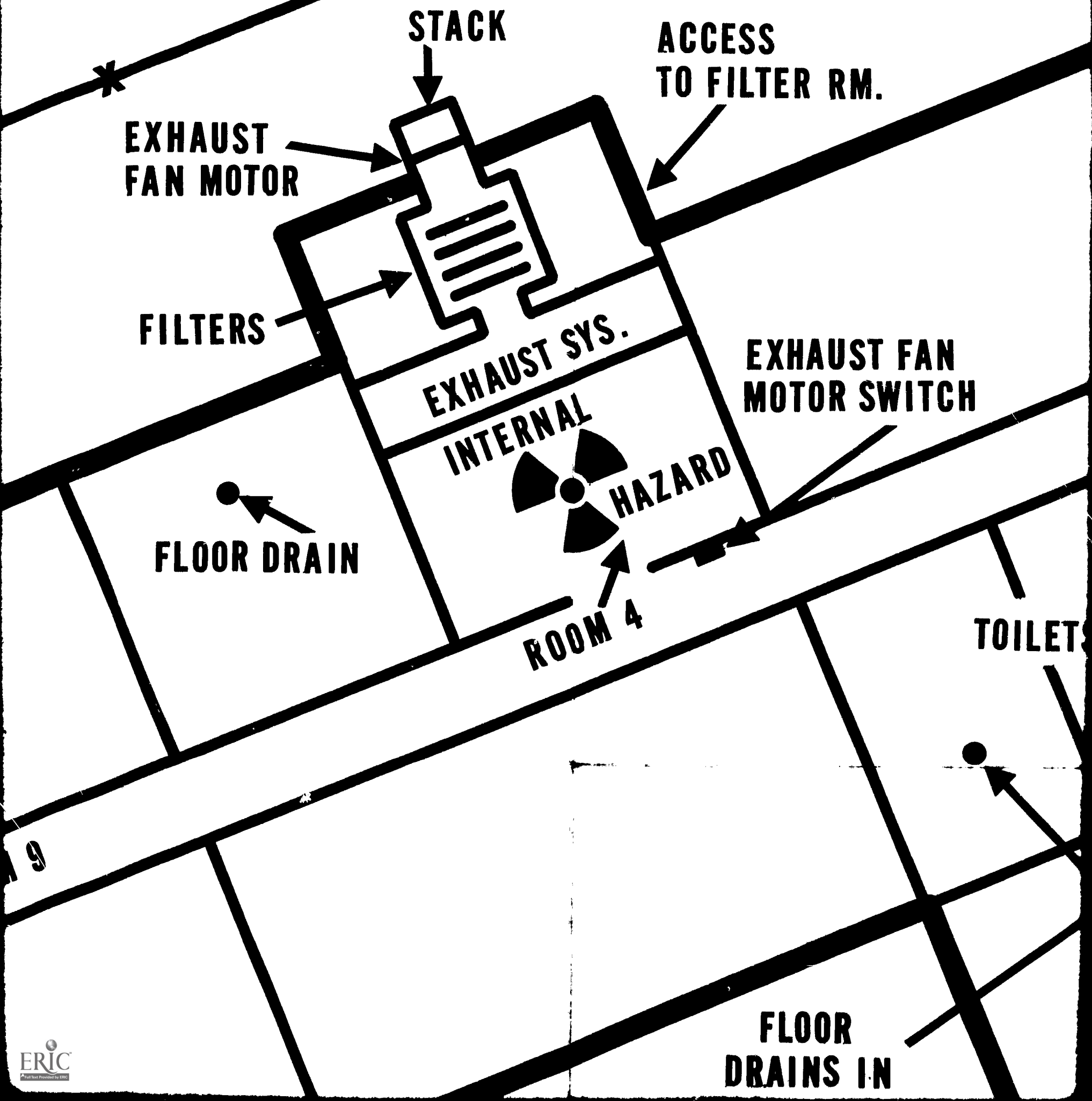
RADIATION PRE-
SKETCH OF BUILDI



FIRE PLAN

NG


STACK
ACCESS
TO FILTER RM.
EXHAUST
FAN MOTOR
FILTERS
EXHAUST SYS.
EXHAUST FAN
MOTOR SWITCH
INTERNAL
HAZARD
FLOOR DRAIN
ROOM 4
TOILET
9
FLOOR
DRAINS IN

RADIATION
METERS FOR
F.D. USE

GUARD'S
OFFICE

AIN BLDG.
LEC. SWITCH

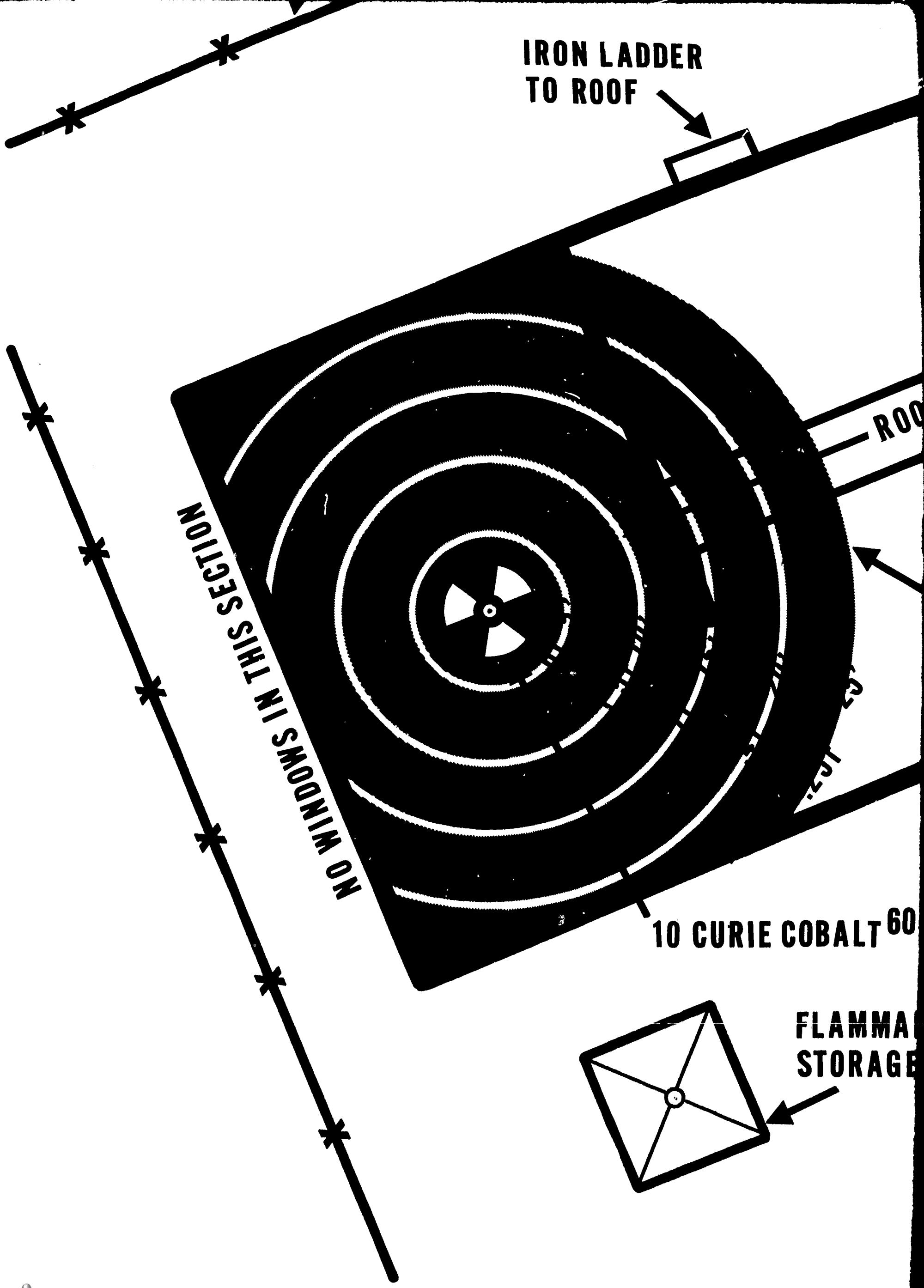
MAIN GATE
(OPEN AT ALL TIMES)

NORTH ST.

SPRINKLER VALVE

OFFICE

SPRINKLER
CONNECTION


IRON LADDER
TO ROOF
ROO
NO WINDOWS IN THIS SECTION
10 CURIE COBALT 60
FLAMMA
STORAGE

EXHAUST S

MOTOR SWITCH

INTERNAL

HAZARD

FLOOR DRAIN

ROOM 4

TOILETS

FLOOR
DRAINS IN
TOILET ROOMS

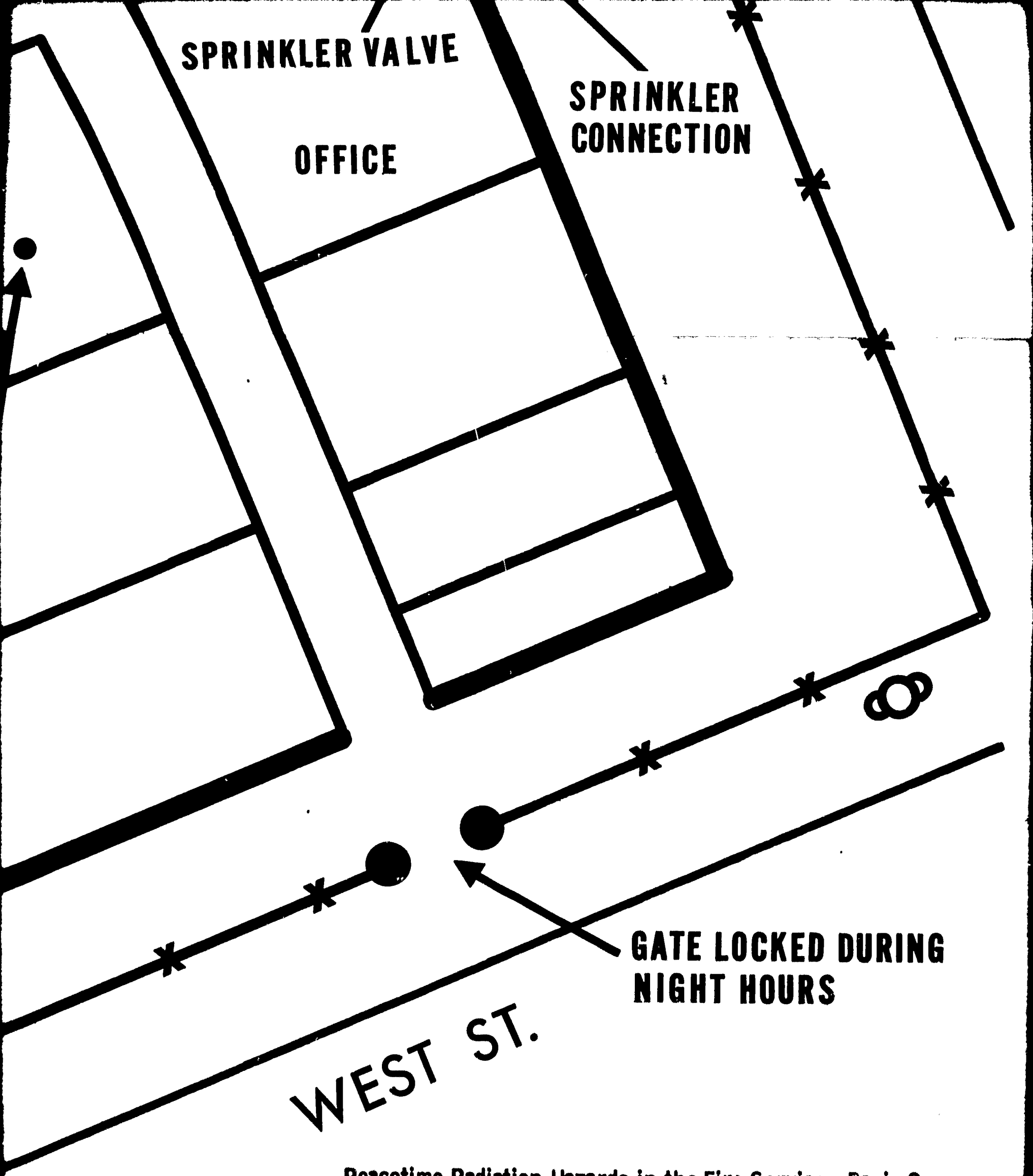
GAMMA RADIATION LEVELS PER HOUR
AT SUCCESSIVE 5 FOOT DISTANCES
FROM UNSHIELDED SOURCE

OURCE

E LIQUIDS
HED

VE
AT

HYDRANT



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